

MEMORANDUM FOR:

Enclosed are a copy of the 1981
JEC Briefing and Testimony as per our
Telephone Conversation of 4/13/82

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15 October 1981

1981 JEC BRIEFING

GENERAL

I. Mr. Chairman, when CIA representatives have addressed your committee in the past several years, they have discussed in detail the fundamental change in store for the Soviet economy in the 1980s. They have testified that because of impending labor and energy shortages, rising raw material costs, planning errors, and sluggish productivity growth, the 1980s would be a period of substantially reduced growth.

A. Our basic message has not changed, Mr.

Chairman. This morning, however, we would like to draw your attention to some recent developments in the Soviet economy that pose some difficult near-term policy choices for the USSR's leadership.

B. As the Soviet Union completes the first year of its new five-year plan, the economy has turned sour before the much-discussed labor and energy problems have become acute.

1. Agriculture, of course, has had three consecutive poor years.

2. But several industrial sectors have also performed badly during this period. In industry, productivity trends have been especially disappointing since 1975.
- C. The shortfalls in the economy have advanced the time in which the leadership has to deal with an economic crunch.
1. We think, for example, that planned investment will not be enough to sustain growth in view of the productivity record of the past few years. Planned investment growth during 1981-85 is to average only 1.6 percent per year, less than the average annual growth of 3.5 percent achieved during 1976-80.
 2. Several critical sectors such as energy, transportation, agriculture, machine building, and construction materials are vying for investment resources.
 3. US defense spending plans have probably led the Soviet military to ask for more money even though present Soviet spending levels are already a heavy burden.
 4. The Soviet consumer, meanwhile, no longer can count on the steady and marked improvement in living standards characteristic of the 1960s and early 1970s.

5. Finally, the chaos in Poland has shown Moscow how expensive maintenance of Soviet power in Eastern Europe might become.

D. For a group of Soviet leaders in their last years of power, decisions on how to deal with a fairly sudden slowdown in economic growth have been hard to come by.

1. This morning, Mr. Chairman, after first reviewing the current performance of the Soviet economy, we would like to discuss four aspects of Soviet policy that are both critical to the economic vitality of the USSR and of great importance to East-West relations.
2. We will consider recent developments in agriculture and energy, emphasizing the policies that the leadership has adopted to handle emerging problems.
3. We will then review Soviet use of foreign trade as a means of softening the impact of domestic difficulties.
4. In concluding our presentation, we will try to assess the possibility that the leadership might modify Soviet military programs in response to changes in US defense programs or to give more resources to sectors of the economy that are in trouble.

CURRENT PERFORMANCE

II. 1979 and 1980 were bad years for the Soviet economy.

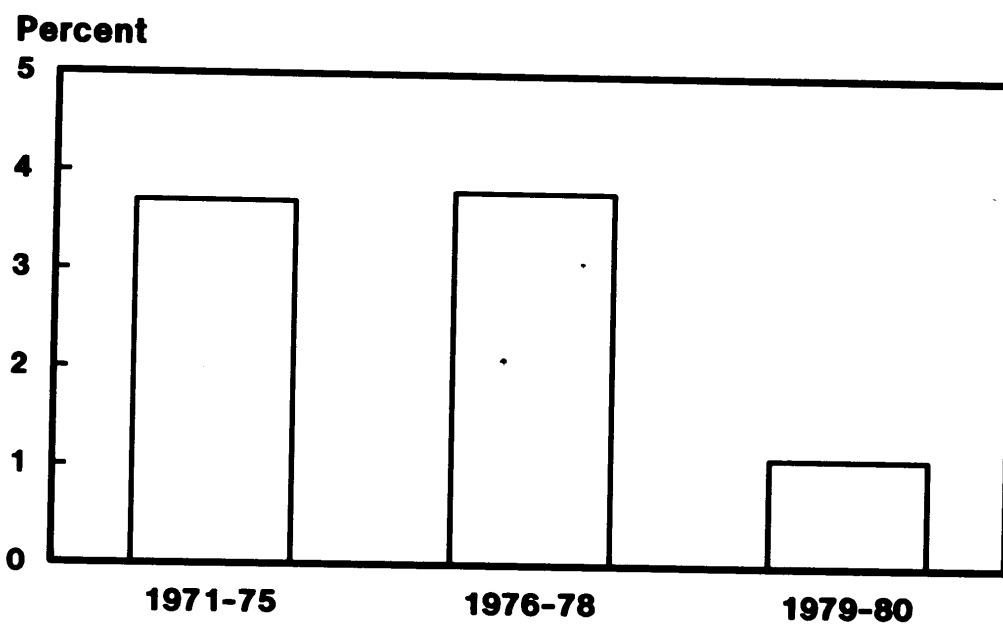
A. Although we have long foreseen a slowdown in economic growth, the economy's performance during the past two years was worse than we anticipated.

- 1. Shortfalls in industrial production and back-to-back harvest failures reduced GNP growth to its lowest level since World War II.**
- 2. Figure 1 shows that after averaging close to 4 percent during most of the 1970s, the average annual rate of GNP growth fell to just 1 percent during 1979-80, led by a 10 percent drop in farm output. (See Figure 1)**

B. Moreover, the economy shows few signs of rebounding this year. We now believe the Soviets have had their third straight harvest failure.

- 1. Our current estimate is for a grain crop of no more than 170 million tons, at least 19 million tons less than last year's poor harvest.**
- 2. Output of most nongrain crops--while generally above last year's terrible**

USSR: Average Annual Rate of GNP Growth 1971-80



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performance--is also unlikely to exceed the average of the past five years.

3. Although overall Soviet farm production is expected to increase slightly from last year's extremely depressed level, Figure 2 shows that output will still be below the 1976 level. (See Figure 2)

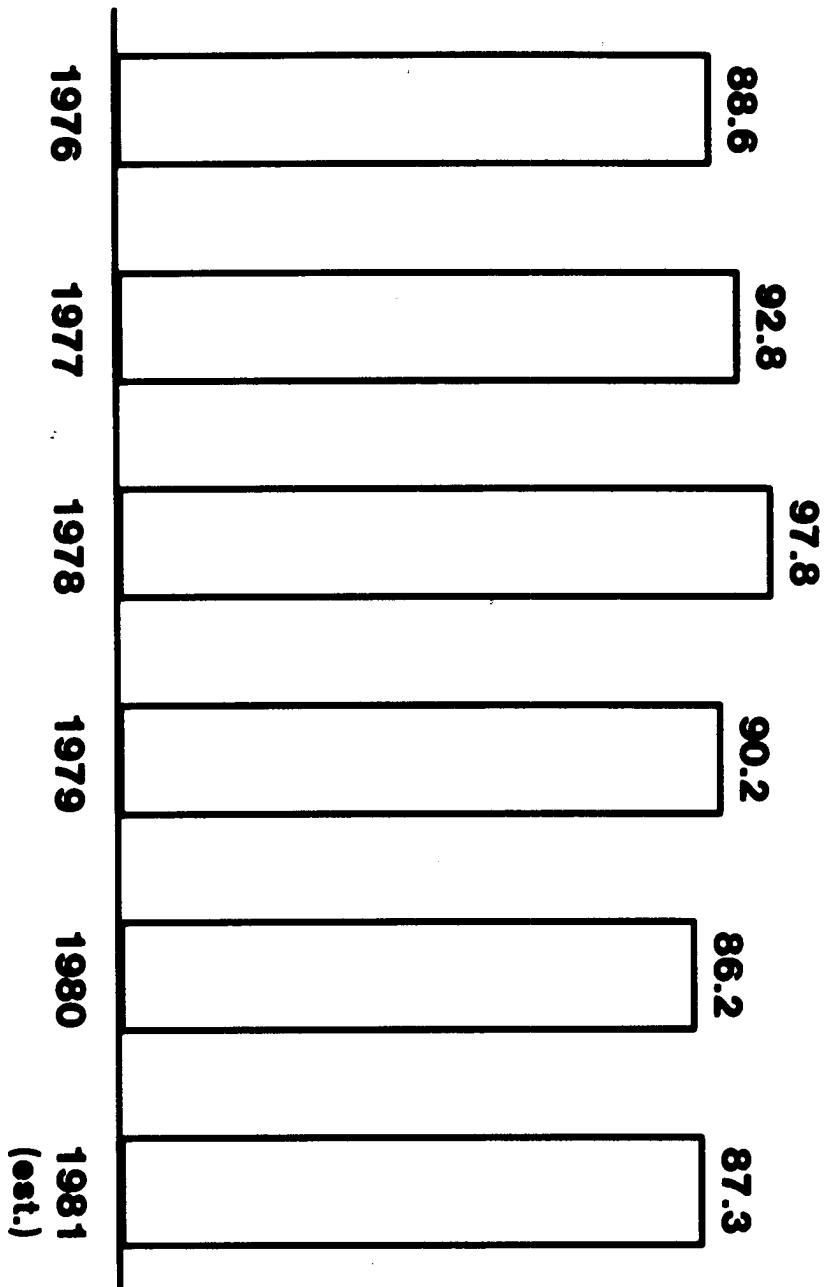
C. Industry, the backbone of the Soviet economy, is also doing poorly. More than halfway through 1981, growth in almost every major sector is running behind the pace of a year ago.

1. Industrial output grew only 2 percent in first-half 1981 compared with first-half 1980. In the post war period, only the 1979 first-half showing was worse.
2. Lagging output of industrial materials, especially ferrous metals, is a major reason for industry's malaise. Crude steel production showed almost no gain compared with a year ago, while civilian machinery output--the major source of investment goods and consumer durables--increased only 2.6 percent during first-half 1981, a post-war low.

D. Underlying industry's poor showing is the continuing slowdown in the growth of labor

USSR: Value of Farm Output

Billion 1970 rubles



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productivity. Productivity during the first six months grew at an annual rate of less than 1 1/2 percent--almost one-third less than in 1979-80 and far below the 4 1/2 percent average targeted for the 11th FYP.

1. One reason for the sharp fall in productivity growth is the rising cost of exploiting raw materials. The quality of mineral deposits has declined in many instances, and minerals, energy, and timber must be obtained from remote areas, notably Western Siberia.
2. At the same time, the failure to increase civilian machinery output more rapidly has limited Moscow's ability to introduce labor-saving technology.
3. Although difficult to measure, declining worker morale also seems to be taking its toll. Workers who have seen their hopes for a better life dashed in recent years simply have not responded to nominal increases in wages with harder work.
 - a. One indication of the decline in consumer well-being has been a sharp rise in the mortality rate among the population.

- b. During the past decade, the crude death rate has increased by roughly 25 percent--an unprecedented occurrence in a developed country.
 - c. Males ages 20-44 have been hit particularly hard--in large part because of the sharp rise in alcoholism among this group.
 - d. As a result, the life expectancy among males has dropped to 63 years, placing the USSR in a peer group with LDCs in Latin American and Asia.
- 4. Finally, shortages of basic materials, such as steel and cement, have become much more serious in recent years, creating bottlenecks throughout the economy and disrupting and, in some cases, halting construction activity and industrial operations.
- E. Because these problems cannot be easily overcome, Moscow will find it very difficult to break out of its economic doldrums during the next several years.
 - 1. We now estimate GNP growth this year at less than 2.0 percent, a weak rebound given the harvest problems the past two years.

- a. Net farm output which has declined for two consecutive years will rise little if at all as crops other than grain have suffered from poor weather conditions this year.
2. Even with a return to more normal harvests, we expect problems in industry and other sectors of the economy will cause GNP growth to fall to about 1.5-2 percent per year by the mid-1980s.
3. It should be stressed that these figures are just averages. In poor harvest years, GNP could actually decline, while in bumper crop years growth could be as high as 3-4 percent.

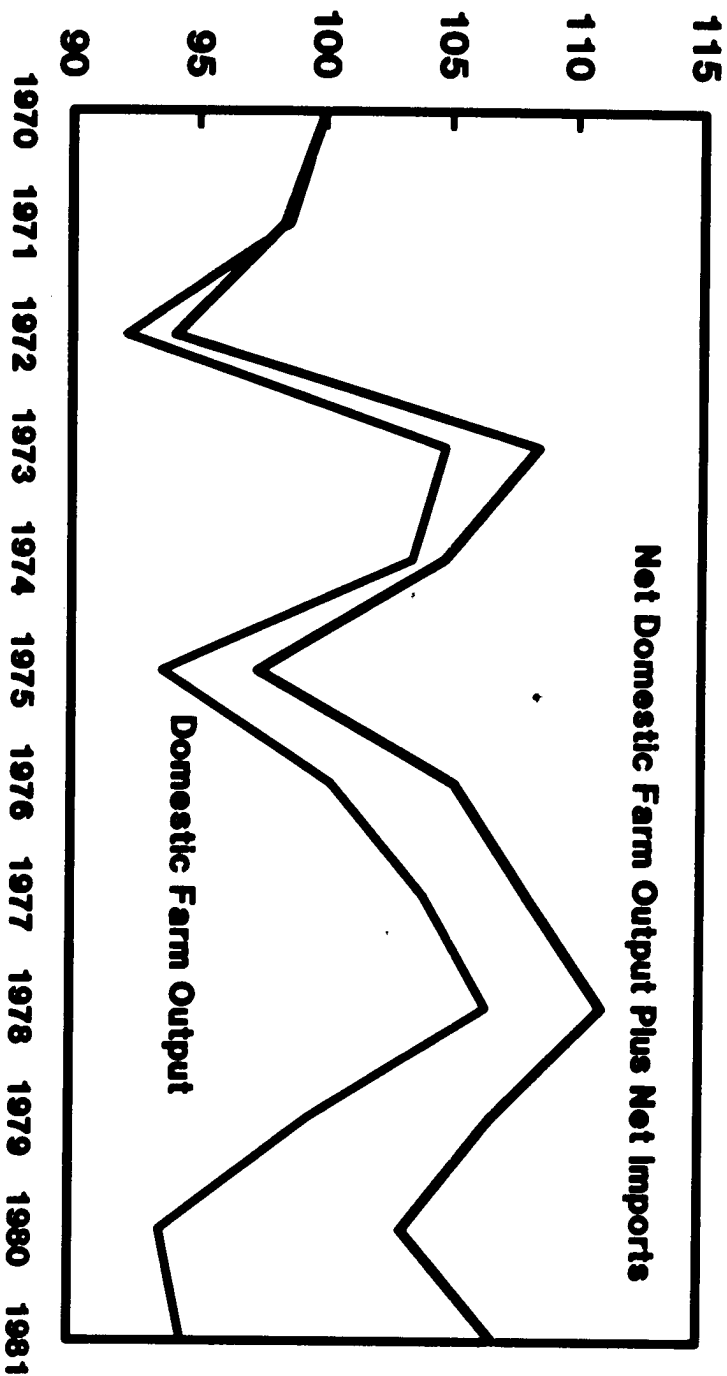
AGRICULTURE

- III. Turning first to agriculture, the USSR in the 1980s is experiencing a marked slowdown in the growth of production at a time of steadily rising demand for farm products--a demand occasioned by growth of population, increased purchasing power, and heightened expectations of an improved diet.
 - A. Despite the depressed levels of annual farm output experienced since 1978, Soviet leaders have shown no inclination to increase what they view already as a very large share of resources devoted to the farm sector.

- B. Instead, they have been temporizing; relying on record levels of imports of farm products to compensate for harvest shortfalls while hoping for the weather to turn in their favor.
 - 1. Net imports have nearly doubled since 1978 and are expected to rise by about 1/3 in 1981.
 - 2. Even so, the per-capita availability of agricultural commodities fell in 1979 and 1980 and is still not expected to reach the 1978 level this year. (See Figure 3)
- C. While the odds are that the weather will be better next year, a return to the unusually favorable weather patterns that existed from the mid-60s to the mid-70s seems unlikely.
 - 1. Rather the somewhat harsher, conditions that prevailed for 20 years prior to the mid-60s are likely to return, that is, years of near average temperatures and moisture will be interspersed with years of above-average and below-average conditions.
- D. In this environment, the steady gains in agricultural output that accrued between the mid-60s and mid-70s--largely the result of good weather--will be nearly impossible to achieve in the eighties unless there is a sharp reversal of current trends in the allocation of inputs to agriculture.

USSR: Per Capita Availability of Agricultural Products*

Index 1970=100



*Indexes are based on per capita physical quantities produced and imported, valued at 1970 average realized ruble prices.

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1. Even before 1979, progress in agriculture was declining due to slower growth in the resources devoted to the sector.
 - a. The share of investment allocated to agriculture, for example, has not changed since 1975 despite a sharp fall-off in the growth of total investment.
 - b. Annual deliveries of tractors and trucks to farms have remained at about the 1975 level during the past five years.
 - c. The increase in the deliveries of mineral fertilizer during 1976-80--a major factor promoting higher yields--slowed substantially from earlier periods.
2. Moreover, Moscow's Plan for 1981-85 suggests little or no change in these trends.
 - a. Increments to agricultural investments will continue to fall.
 - b. Of the major industrial inputs, only growth in the deliveries of fertilizers are expected to exceed rates of recent years--and achieving this goal is dependent on bringing on-stream long overdue new productive capacities.

E. The phlegmatic attitude of Soviet leaders toward the farm sector reflects not only a belief that weather conditions will improve but also a perception that widespread popular unrest is unlikely.

1. Dissatisfaction with food supplies, while vocal, does not appear to affect the most important requirements of the population.
2. So far, Moscow has been able to limit the worst impact of food shortages to groups who have little or no political or economic leverage.
 - a. Special distribution systems and rationing have ensured that elite groups and factory workers in favored industries have gotten first crack at available supplies.
 - b. Black market activities also have expanded greatly, relieving the pressure somewhat for those with special access and the necessary funds.
3. Soviet leaders probably are also counting on continuing increases in hard currency earnings to support large imports of grain and other foodstuffs that they judge will carry them over the lean years.

F. If these actions and expectations reflect considered Soviet judgments, they may be far too complacent.

1. As I've already mentioned, we think they are overly-optimistic about future weather patterns.
2. Even if grain production were to return to trend (i.e., harvests on the order of 215 million tons in 1982 and 230 million tons in 1985), continued large imports of grain would be required even to boost per capita meat consumption slightly (1-2 percent annually).
3. In a population where per capita meat consumption is a key indicator of well-being, consumption gains on this scale are likely to be imperceptible, particularly when compared with the gains posted during the late 1960s and early 1970s.
4. More important, over half the USSR's population has grown up in an atmosphere of steadily rising real incomes, and, thus living standards. A failure to restore this upward trend would be a bitter disappointment and could generate a different response than Soviet leaders currently anticipate.

5. Finally, acquiring the hard currency to support massive imports of food and other consumer goods will be far more difficult in the eighties than it was in the seventies because of a loss in the major source of hard currency earnings, a development that I will turn to shortly.

ENERGY

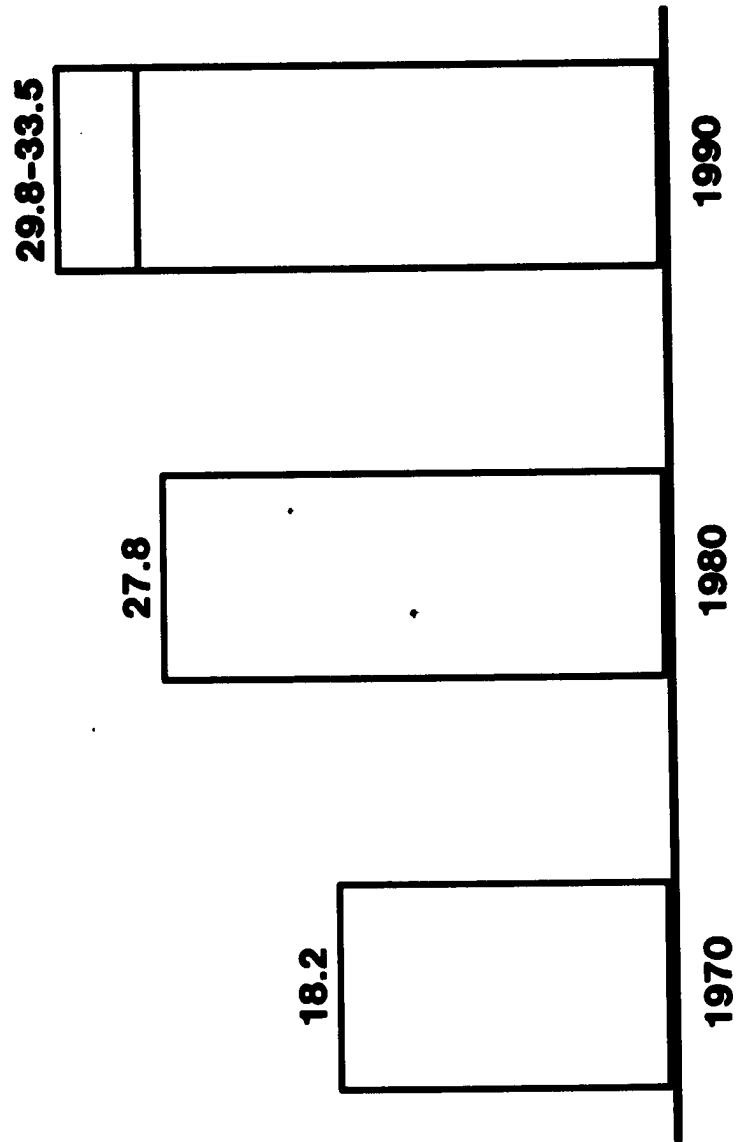
IV. Agriculture is not the only sector that promises to be a drag on the the Soviet economy in the 1980s. Rising costs of energy production are forcing the Soviets to increase the fraction of total investment allocated to this sector, at the same time that growth in output is slowing significantly.

A. During 1971-80, energy output increased by 10 million barrels/day (b/d) of oil equivalent or roughly 4.5 percent per year.

1. During the next decade, however, we believe the Soviets will be lucky to achieve half that rate, with growth probably averaging about 2 percent annually. (See Figure 4.)
2. Oil production--stagnant at about 12.1 million b/d for the last year--is the major stumbling block slowing total energy growth. Our forecast in 1977, that Soviet oil production would peak no later than the

USSR: Primary Energy Production

Million b/d oil equivalent



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early 1980s and then go into decline, remains essentially valid. Four years later, armed with considerable new data and analysis, we have sharpened our numerical forecast of the likely production level in 1985 and see more clearly a continued decline in production throughout the decade.

- B. In particular, we do not believe that Soviet plans, which call for growth in oil production through 1985 at a rate of about 1 percent a year, are achievable.
1. The fundamental problem is that the Soviets have been depleting their oil reserves, especially their high quality reserves, more rapidly than they have found new reserves.
 2. Most serious is the worsening quality of reserves. The Soviets have already thoroughly drilled nearly all their known giant fields, and they have reported no discoveries of new giants for seven years. New production is coming from smaller fields or from less productive strata of large fields. Consequently the amount of drilling needed per unit of new oil output is increasing rapidly.

3. At the same time, depletion of existing fields is also increasing so that Moscow finds itself on an accelerating treadmill--needing to invest at an increasing rate just to keep output from falling.
4. Since 1977, Moscow has in fact made a massive effort to sustain oil production capacity. This effort is focussed on the West Siberian Basin, where increases in output are planned during 1981-85 to offset the inevitable declines in the older oil production regions.
5. The investment effort is falling behind plan, however, and we believe it is overly ambitious, given the difficult physical conditions in West Siberia, its remoteness, and the growing complexity of production requirements. Consequently, we expect production to begin declining before the mid-1980s.

C. In the longer term, Moscow will have to greatly accelerate the rate of discovery of new oil reserves to avoid a further decline in output. This is not impossible, but the odds are strongly against it. Many new fields will be found, but few are likely to be large.

- D. In the short run, increased use of Western equipment--for both drilling and fluid lift--could help delay the inevitable decline in Soviet oil production.
- E. Oil is by no means the only Soviet energy problem, however.
 - 1. Coal--which currently accounts for more than one-quarter of total energy production--has declined steadily since hitting a peak of 724 million metric tons (6.8 million b/d oil equivalent) in 1978. Production last year was 716 million metric tons and may be only 710 million metric tons this year.
 - a. Underlying the industry's poor showing has been a slowdown in new commissionings and an increase in mine depletion.
 - b. At the same time, the increasing depth and reduced seam thickness of coal seams at many underground mines have virtually wiped out any productivity gains.
 - 2. Although the new five-year plan targets call for production in 1985 to reach 770-800 million metric tons, we believe 740 million tons is a more realistic figure.

- a. Moreover, the energy value of that output, expressed in million b/d oil equivalent, will probably be no higher than the 1980 level (6 million b/d) because much of the increase will come from poorer quality coal.
 - b. Although the USSR possesses enormous coal reserves, most new basins are located in Siberia, far from major consuming centers, and contain coal with a lower heat value. Major investments will be needed to develop these fields, but it will be at least another decade before they will have a major impact on production.
- F. Growth of electric power production will also slow.
- 1. We expect annual growth in power output will average 3.7 percent during 1981-85, compared to 4.5 percent during 1976-80.
 - 2. Nuclear power will provide much of the increase in power production.
 - a. Moscow expects new nuclear power plants to account for more than 50 percent of the planned power increment, with nuclear production rising from 70 billion kwh in 1980 to 220-225 billion kwh in 1985.

- b. Although shortages of labor and nuclear plant equipment will probably cause the nuclear program to fall 10-20 percent short of that goal, its contribution to energy output will still be appreciable.
 - c. The share of nuclear power in total power output will increase from 5 percent in 1980 to almost 12 percent in 1985, while nuclear power's contribution to total Soviet primary energy production will rise from 1 percent in 1980 to 3 percent by 1985.
- G. In contrast to oil, coal, and electric power, prospects for natural gas remain bright.
 - 1. With roughly one-third of known world gas reserves, gas output will contribute roughly 90 percent of the net increase in Soviet primary energy production during the 1980s.
 - a. By mid-decade, the Soviets will probably supplant the US as the world's largest gas producer, with output of roughly 58 billion cubic feet/day (cf/d)--almost 10 million b/d in oil equivalent.

b. By 1990, gas probably will be the largest single source of Soviet energy, with production at roughly 69 billion cf/d.

H. Reaching these targets, however, will be a costly undertaking.

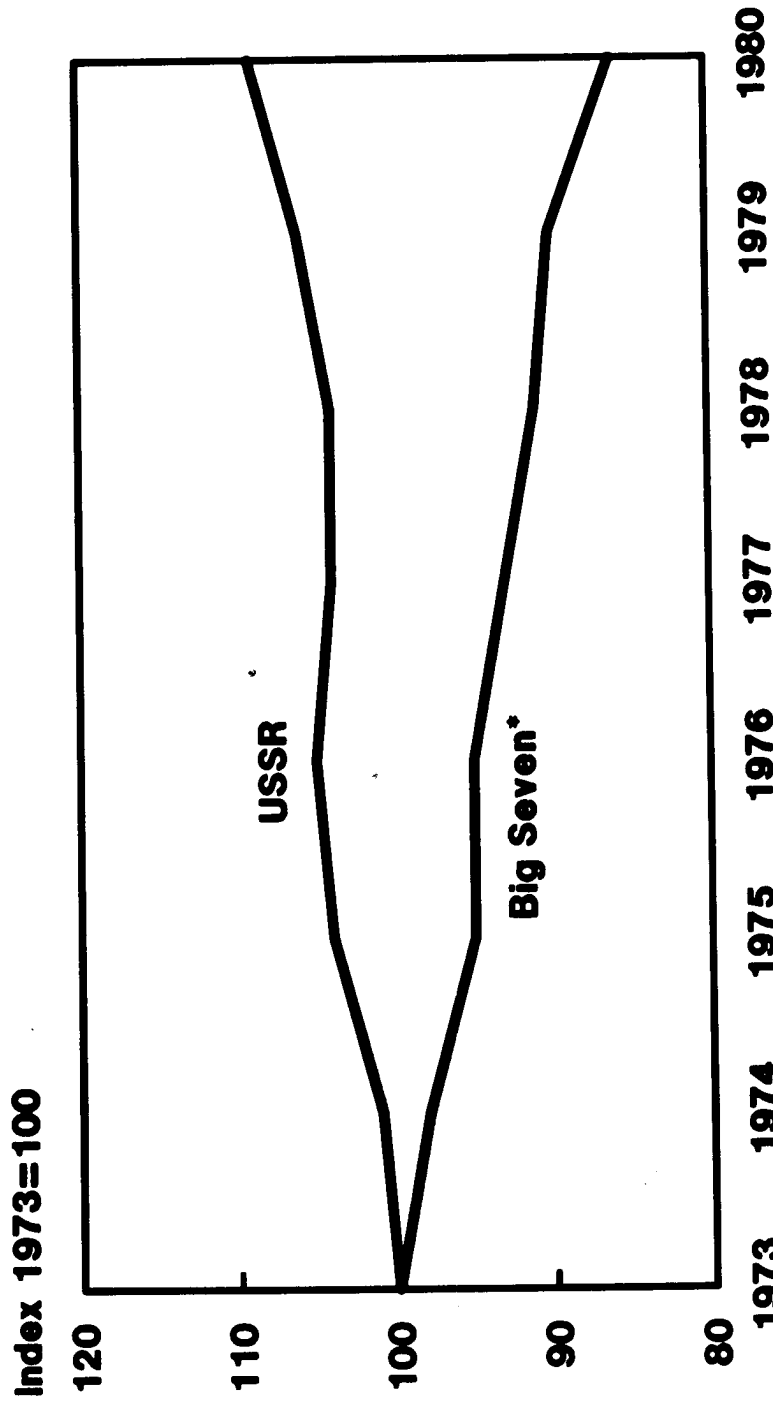
1. During the next 5 years, the Soviets must build an unprecedented 6 major trunklines from Siberia--each one a larger undertaking than the Alaskan oil pipeline--even though labor and equipment are already stretched thin. (Currently, the Alaska pipeline would cost roughly \$10 billion to build.)
2. At the same time, the need to build support facilities--such as roads, all-weather ports and electric power facilities--will also tie up enormous investment resources.

I. Moscow, however, will have to pay this price.

1. Gas will be a critical source of hard currency for Moscow by the mid-1980s, since oil exports to the West may well decline sharply by that time unless the Soviets are more successful in substituting gas for oil than they have in the past. Moscow already plans to step-up substitution substantially and any further increase in this program would have to come at the expense of other sectors of the economy.

2. If the proposed Siberia-to Europe gas pipeline deal goes through, gas revenues by 1990 would replace 50-70 percent of oil's hard currency earnings of \$12.5 billion in 1980, depending on whether one or two lines are built.
 3. Without the pipeline project, gas earnings would equal only 25 percent of oil's 1980 revenues, creating a serious constraint on Soviet import capacity.
- J. Despite the rosy outlook for gas output, the domestic economy will still be hard hit by the decline in total energy growth. The Soviets simply have not curbed their energy appetite as much as some other industrial nations, and despite their increased concern with energy savings, they will achieve only minimal success in conservation by the mid-1980s.
1. Figure 5 indicates that, in contrast to the West, Soviet energy consumption has continued to grow more rapidly than GNP.
(See Figure 5)
 2. Although the 1981-85 Plan calls for conservation of fuels across a broad spectrum of the economy, the current structure of Soviet energy demand and the nature of the Soviet economic system will

Energy/GNP Ratios



* The Big Seven includes the US, Canada, West Germany, France, Great Britain, Italy, and Japan.

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restrict the energy savings attainable in the next few years.

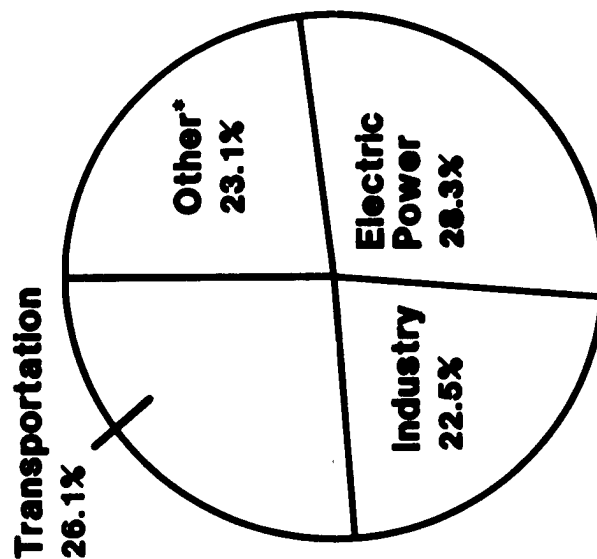
K. A major reason conservation gains are difficult in the USSR is that most of them require massive investments to modernize and renovate industrial and power-generating facilities. Relatively little conservation is possible in households, transportation, and other uses. (See Figure 6.)

1. Soviet transportation is already energy-efficient and does not have the potential for the large savings that were achieved relatively rapidly in many Western countries.
2. Residential and commercial energy use is comparatively small. This is an area where energy savings in the West have been important.
3. In the USSR, therefore, the largest energy savings must come in the industrial and electric power sector. Producing and introducing energy efficient equipment, however, will require most of the decade.

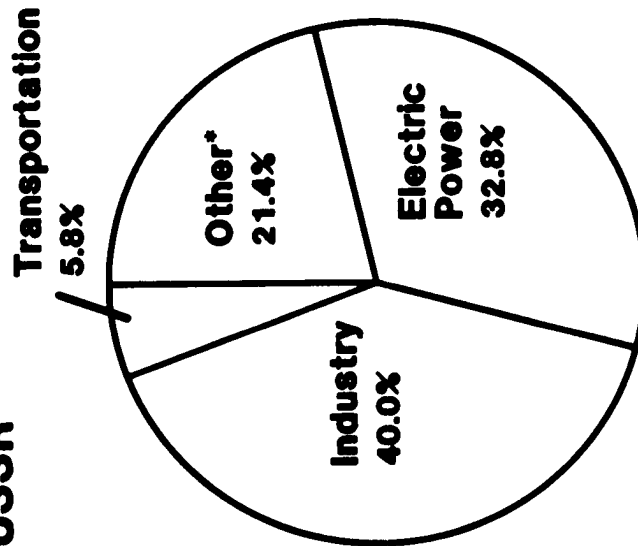
L. Paradoxically, the Soviet command economy also seems less effective than many Western economies in stimulating or enforcing conservation efforts.

United States and USSR: Gross Energy Consumption, 1975

United States



USSR



* Other includes agriculture, construction, and heating for residential, commercial, and government buildings.

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1. The Soviets currently do not monitor energy use of even the largest consumers-- industrial and residential users--because reliable metering devices are scarce.
 2. Soviet planning procedures and managerial incentives, by their very nature, do not encourage conservation at the factory level.
 - a. The emphasis placed by planners on the amount of industrial output, rather than on profit maximization, leads plant managers to concentrate on achieving production goals even if energy and other inputs are used inefficiently.
 - b. Although energy prices will be raised in 1982, industrial users will still focus on the overriding goal of meeting goals for gross value and assortment of output.
- M. While across-the-board savings in energy are unlikely by the mid-1980s, Moscow is urgently seeking to reduce the growth in oil consumption through substitution of other fuels.
1. Natural gas, and to a lesser extent coal, are to substitute for oil, primarily as a fuel for use with new capital equipment that otherwise would have used oil.

2. This program is proceeding haltingly, however, partly due to slow growth in coal output and to Soviet inability to increase rapidly the nationwide grid of gas distribution pipelines. We, therefore, expect total domestic Soviet oil demand to grow through the mid-1980s.
3. Moscow can cushion the effect of declining oil production and increasing demand for the next few years by cutting exports to the West, but the Soviets will have to choose between the need to export energy to pay for high priority imports and the direct requirements for energy in their domestic economy.
4. Alternatively, Moscow could cut exports to Eastern Europe, but only at the risk of worsening a highly unstable situation there.

HARD CURRENCY EARNINGS

- V. The USSR has benefited greatly from the unique circumstances of large windfall gains in 1979 and 1980 from a favorable shift in the terms of trade.
 - A. Moscow has thus been able to turn to the foreign trade sector for relief from its domestic problems.

1. Without agricultural imports the Soviet diet would have deteriorated.
2. Imported steel has helped offset domestic production shortcomings.
3. Purchases of equipment and tubular steel pipe from foreign suppliers have allowed stepped-up investment and exploitation of critical energy resources.

B. In the past three years Moscow substantially strengthened its international financial position primarily by capitalizing on rising energy prices.

1. During this period, oil prices on average rose from about \$14 a barrel to roughly \$35 a barrel.
2. Hard currency export earnings from oil as a result more than doubled from \$5.5 billion to \$12 billion.
3. Sales of natural gas grew equally spectacularly.
4. Earnings from oil and gas alone now account for about 60 percent of all hard currency export earnings.

C. Spiraling gold prices and stepped up arms sales gave Moscow an added boost to hard currency earnings.

1. The average price of gold rose from less than an average of \$200 an ounce in 1978 to an average of more than \$600 an ounce last year.

(Security deletion)

- D. With the push from energy, gold, and arms sales, total hard currency earnings in the West reached a record \$30 billion in 1980.
- E. While hard currency earnings thus climbed steeply, hard currency outlays remained static. Soviet imports of machinery and equipment leveled off at \$6 billion after rising sharply in the early and mid-1970s.
 1. Delays in putting imported equipment into operation contributed to the leveling off of new orders.
 2. The huge backlog of unfinished construction in the USSR slowed capital formation throughout the economy.
- F. Helped by the improvement in its terms of trade with the West, the USSR boosted imports of agricultural and steel products, cut back on its exports of oil, and sold less gold, while holding its debt constant.
 1. At the beginning of 1981, the USSR had nearly \$9 billion in Western banks, a record gold stock of 1,800 tons (worth \$26

billion at \$450 per ounce), and a solid credit rating with Western banks.

G. This year, however, Moscow's trade position has taken a turn for the worse, and future deterioration may be in the offing.

1. The Soviet trade deficit could double to \$5-6 billion as this year's poor harvest again pushes up agricultural imports and soft world demand cuts earnings from oil sales.

- a. Poor harvests in 1979 and 1980 and higher world market prices have been responsible for most of the increase in Soviet hard currency imports in 1980-81, pushing the agricultural bill from \$3 billion to \$9 billion in 1980. This year the total could reach almost \$12 billion, or over 40 percent of Moscow's hard currency imports. (See Figure 7.)

- b. At the same time, weaker world oil prices this year and another fall in export volume are likely to result in a leveling off and perhaps a decline in the value of hard currency exports to the West.

USSR: Hard Currency Imports*

	1976	1977	1978	1979	1980	1981**
Total Hard Currency Imports (billion US \$)	14.8	13.7	16.6	21.2	26.2	29-30
Agricultural Imports (billion US \$)	4.1	3.2	3.8	5.5	8.8	12.5
Agriculture's Share of the Total (percent)	27.7	23.4	22.9	25.9	33.6	41.7-43.1

*Current prices

** Estimated

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- c. A rise in exports other than oil is unlikely to offset the loss of oil earnings. While natural gas sales have risen steadily in recent years, at \$3.5 billion its share of total exports is still modest.
 - d. Sales of civilian machinery and equipment for hard currency have plateaued and may in fact fall; exports of wood, metals and non-fuel minerals are growing little if at all.
- H. In spite of these developments in the trade accounts, we expect Moscow to close out 1981 with a current account surplus, albeit one much reduced from the 1980 level.
 - 1. Earnings from services, arms exports, and gold sales should more than offset the \$5-6 billion trade deficit and the higher interest payments on foreign debt.
 - a. Recent evidence suggests that Moscow is again active in the gold market.
- I. If the trade trends evident since 1979 continue, however, the USSR could experience a decline in its hard currency exports before the mid-1980s.

1. Oil export earnings will be squeezed by stagnant or falling production, rising domestic consumption and probably weak prices.
 2. The Siberian gas pipeline--the only potential large earner of foreign exchange --will not be fully operational until 1986 or 1987 at the earliest.
 3. Some potential may exist for increasing arms sales. (Security deletion)
 4. But, the export picture is not bright for other Soviet products.
- J. Thus, Moscow will have to rely more on gold sales and on Western borrowing, if it is to avoid the unpleasant task of cutting imports of agricultural products or capital goods.
1. Given its low debt service ratio, Moscow should have little difficulty raising additional funds as long as credits are tied to imports and the political climate does not deteriorate greatly.
 2. But even so, the Soviet hard currency position will be extremely tight.
- K. Under the best of circumstances, moreover, the USSR's foreign payments position will almost certainly restrict Moscow's ability to supply hard currency goods and assistance to its East European allies.

1. Since the summer of 1980, Moscow reportedly has provided some hard currency support to Poland.
 - a. More significantly, the Soviets have allowed Warsaw to run a trade surplus of upwards of \$2 billion.
 - b. Counting all forms of aid, the annual cost of supporting Poland may be close to \$4 billion.
 - c. This opportunity cost of direct and indirect aid for all of Eastern Europe is now close to \$20 billion.
2. Not only will Poland need large amounts of aid for the foreseeable future, but other Warsaw pact allies are either in or heading for economic difficulties.
 - a. These governments are sure to use the Polish example in buttressing their arguments for additional Soviet assistance.
 - b. Any sizable increase in East European demands will compound the unpleasant choices facing the Soviet leadership.
 - (1) A decision to market more gold could easily depress prices and quickly lower Soviet earnings.

- (2) Moscow would probably prefer to step up borrowing from the West, but to do so against the current backdrop of high interest rates would raise substantially the cost of servicing its debt.
- (3) In any event, either option would be a stop-gap measure--ultimately the leadership would have to address the question whether or not to cut back on much needed agricultural imports or on purchases of nonagricultural goods, which already are declining in real terms.

DEFENSE

- VI. These present strains in the domestic economy, coupled with increasing costs and uncertainties in Eastern Europe, pose some difficult policy choices for the Soviets. From the US perspective, certainly a key issue is whether the Soviets will sustain the current growth of military outlays.
 - A. Indeed, the dominant feature of Soviet defense spending over the past 20 years has been its persistent expansion. Over this period, Soviet leaders have not acted as though costs have been a major factor in their military

decisions. Defense programs have been well funded, even during periods of lagging economic growth, and the follow through on new programs has been strong.

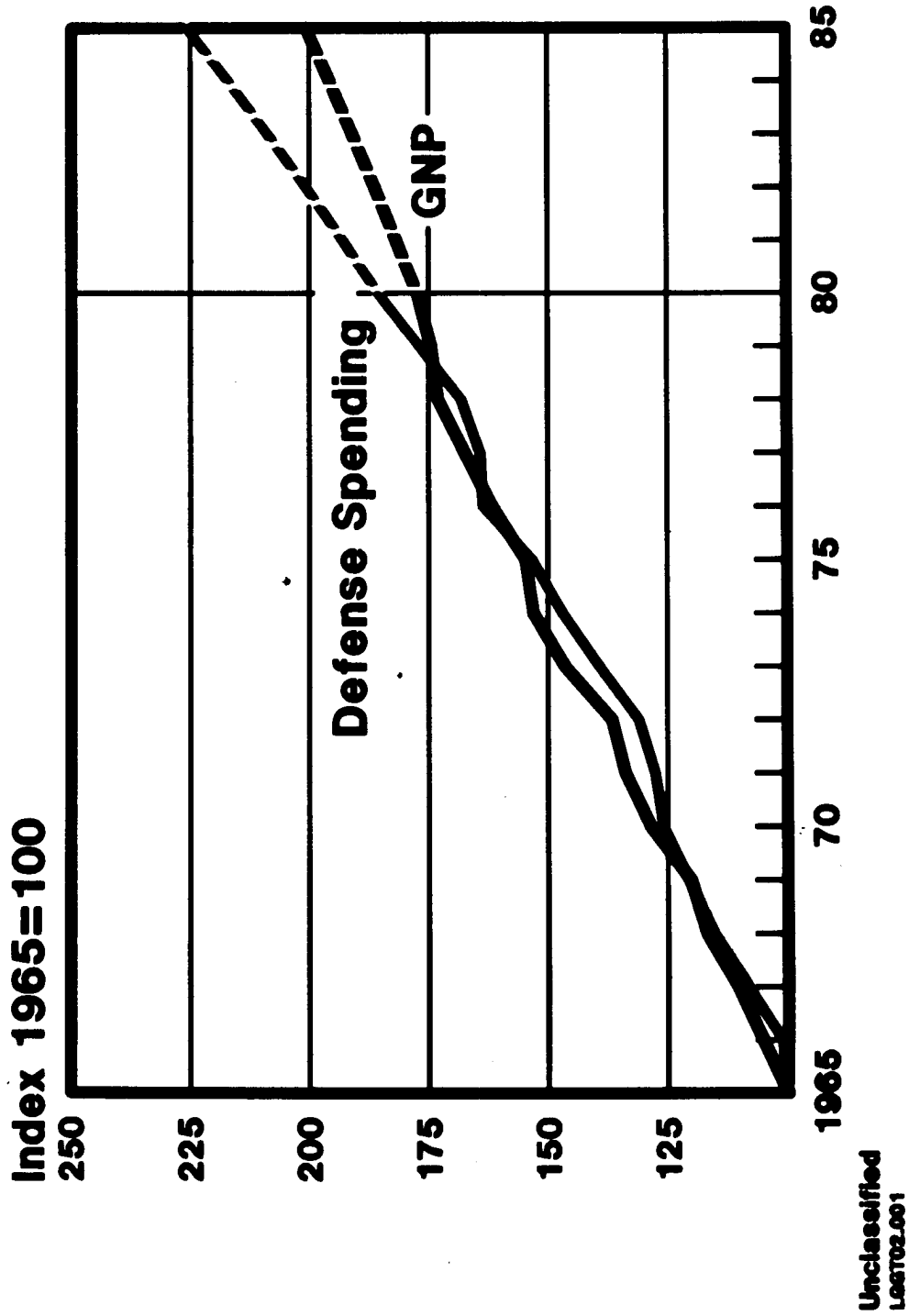
B. Growth in defense spending, which began in 1960, has averaged about 4-5 percent a year during the Brezhnev era --about the same as the growth of the overall economy. Over most of the period, then, defense maintained a fairly constant claim on economic resources--12 to 13 percent of GNP. (see Figure 8.)

C. But recently this situation has changed. Despite worsening economic performance of the past few years, defense has continued to grow at roughly its historic rate and now claims 13 to 14 percent of GNP.

1. If defense spending continues to grow at this pace and economic growth continues to decline, defense could consume about 15 percent of national product in the mid-1980s and as much as 20 percent by the end of the decade.

D. The change in circumstances again raises some of the longstanding questions regarding Soviet military planning:

Growth in Soviet Defense Spending and GNP



- will they maintain the historic share that defense has taken from GNP which would require a slowdown in the growth of defense spending as economic growth slows; or
- will they maintain the historic growth rate in defense spending which would require an increasing shift in resource allocation away from consumer welfare and economic growth in favor of defense; or
- will they accelerate defense spending in response to the recent resurgence of US defense allocations and despite the exacerbation of economic problems already noted.

E. Although all present evidence suggests that they have chosen the second option, I'd like to conclude today's session by reviewing the bidding on all these Soviet policy options.

F. First, the Soviets could opt for reducing the growth rate of the defense budget. This is not to say that a lower growth budget would solve the problem of slowing economic growth--it wouldn't.

1. A lower growth defense budget cannot offset all of the adverse trends that I have already discussed.

2. A lower growth policy, however, would free more resources for investment and therefore could be an attractive policy option.
 - a. As you can see from the next figure, civilian machinery output grew faster than military machinery output between 1965 and 1978. (See Figure 9)
 - b. As economic problems worsened in the late 1970s, however, growth of military machinery output increased, resulting in a slowdown in civilian machinery growth.
 3. Because the machinery sector of the economy also provides investment goods and consumer durables, judicious reallocation of machinery and equipment and construction resources could loosen but not remove some of the current and developing bottlenecks I've already mentioned.
- G. In terms of specific tradeoffs between civilian and military production, a number of military programs preempt high quality resources that could be used for important civilian products. (Security deletion)
- H. Not only do military programs preempt materials, they also preempt the highest quality capital and labor.

GROWTH RATES OF SOVIET MACHINERY OUTPUT AND
MILITARY HARDWARE PROCUREMENT

	<u>1966-70</u>	<u>1971-75</u>	<u>1976-80</u>	<u>1981</u>
Civilian Machinery	8.2	9.0	5.8	1.8
Military Machinery	3.6	4.5	3.4	5-7

(Security deletion)

- I. Although such a low growth policy might be attractive from the standpoint of its economic benefits, it also carries political risks (and military costs).
 1. Lowered growth in Soviet defense spending would be opposed by powerful defense and defense industrial interests, particularly in view of the U.S. buildup.
 2. But even if growth in defense spending were cut back, Soviet military capabilities would continue to improve through the 1980s.
 3. Given the tremendous size of Soviet military procurement--more than 1 1/2 times the size of US procurement in recent years--a change in its growth rate or even freezing it at today's level is unlikely to have a major impact on overall inventories and Soviet force potential until the 1990s.
- J. I want to stress at this point that we have not seen any evidence of a reduced growth on defense spending. Indeed, indicators of future defense spending point to continued real growth at the historic rate, at least through 1985.

1. Evidence of weapons production and testing, as well as capital construction at defense industries and military R&D facilities suggest continued real growth in defense spending, at least through 1985, at about 4 percent a year.

(Security deletion)

2. Another indicator of Soviet intent comes from the Eleventh Five-Year Plan.
 - a. The guidelines for the Plan placed the greatest emphasis on the development of heavy industry, with the highest growth targeted for those branches of heavy industry most closely tied to the military.
 - b. Our analysis of these targets indicate that there is room in the plan for continued growth of defense spending at historical rates.
3. To sum-up, our current estimate of Soviet intentions is for continued growth in defense spending at the past historical rate of about 4-5 percent per year. Of course, any recent decisions the Soviets may have made on increases or cutbacks in the growth of defense would not yet be observable.

- K. Finally, the Soviets could choose to accelerate defense spending because of what they view as a deterioration in the international climate.
1. A succession of statements by top Soviet military leaders, including Defense Minister Ustinov, have proclaimed that the USSR will watch any US military buildup. Although these statements in no way bind Soviet defense policy to a particular direction or level of effort, they are probably meant as a serious statement of Soviet intent to preserve central elements of the strategic military balance in roughly their current proportions.
 2. Soviet statements, moreover, have become increasingly acrimonious, which may in turn suggest that Moscow is becoming more anxious about the near term decisions that it might feel compelled to make in order to counter US programs.
(Security deletion)
 3. If defense spending accelerated, however, there would be a trade-off with investment in some civilian sectors. Heavy industry has powerful patrons in the political leadership, and the priority needs of energy, machinery for industrial

modernization, and transportation could make it difficult to skimp on allocations in these areas.

- a. Consequently, investment in such areas as consumer durables, services, housing, and machinery and equipment for the processed food and soft goods industries likely would be primary trade off areas, with high-priority civilian areas being secondary targets.
 - b. Lack of attention to the consumer sector could have two unpalatable consequences: a worsening of already poor prospects for improving labor productivity and an increase in worker discontent.
4. Moscow is counting heavily on large gains in labor productivity to meet the economy's output goals.
- a. The plan directives currently stipulate that 90 percent of the growth in industry and all of the growth in agriculture must come through increases in productivity.

b. Without some improvement in consumer welfare, chances of generating the large productivity gains implied in the 11th Five-Year Plan will be much reduced.

L. Labor unrest would be even more unpalatable to the leadership than lagging productivity. However, we believe the present leadership will be inclined to continue the current mix of cosmetic concessions, short-term fixes, and patriotic appeals, rather than to allocate a greater share of output to consumption. A decision to shift resources from investment or military spending, if it comes, probably would be the work of a new leadership.

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Hearing on
DEFENSE
THURSDAY, OCTOBER 15, 1981

United States Congress,
Joint Economic Committee,
Subcommittee on International Trade,
Finance, and Security Economics,
Washington, D.C.

The subcommittee met at 10:00 a.m. in Room 1224, Dirksen Senate Office Building; the Honorable William Proxmire presiding.

Present: Senator Proxmire.

Senator Proxmire. The subcommittee will come to order. I am happy to welcome to the subcommittee Henry Rowen, Director of the National Intelligence Council who will present this year's assessment of recent developments in the economy of the Soviet Union.

As you may know, the Joint Economic Committee has been examining the Soviet Economy on a regular basis for about 25 years. This particular series of hearings are entitled Allocation of Resources in the Soviet Union and China. They began in 1974 and have been held every year since that time, and I think I've chaired the hearings consistently during this eight-year period.

The focus of our inquiry has shifted as conditions and interests have changed from year to year. Your testimony, Mr. Rowen this year deals exclusively with the Soviet Union to the exclusion of China. I think this focus is appropriate in view of this Administration's priorities.

Obviously our policies with respect to the Soviet Union have changed, and correctly or incorrectly there is a different approach being taken towards Moscow.

One consequence of this is the acceleration of our defense programs in response to the new perception of the Soviet threat. All the more reason why this subcommittee should concern itself with economic trends in the Soviet Union.

I think that the Superintendent is overdoing this Wisconsin atmosphere a little bit, but I think it will improve as time goes on. I want you to know your reception is not as chilly as the temperature in this room.

Mr. Rowen, if you will introduce the other witnesses accompanying you, you may proceed with your statement as you wish and then we will have some questions.

STATEMENT OF HENRY ROWEN, CHAIRMAN, NATIONAL INTELLIGENCE COUNCIL,

ACCOMPANIED BY:

[REDACTED]

AND

[REDACTED]

OFFICE OF SOVIET ANALYSIS

[REDACTED]

OFFICE OF

GLOBAL INTELLIGENCE AND

[REDACTED]

FROM THE OFFICE OF LEGISLATIVE

COUNSEL.

Mr. Rowen. Thank you, Mr. Chairman. I have several people with me who are experts in various topics. With me at the table is [REDACTED] Office of Soviet Analysis.

Mr. Chairman, I would like to lead off with a brief statement, then answer any questions you might have.

Senator Proxmire. Go right ahead.

^d
Incidentally, if you will abbreviate your statement, your entire statement will be printed in full in the record.

(Committee insert)

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Mr. Rowen. Thank you.

I want to concentrate on four topics. The topics are basically: the overall state of the Soviet economy, agriculture, energy, foreign payments situation and its defense sector.

The overall state of the economy can be summarized very briefly. It is an economy in a good deal of difficulty. It is turning very sour indeed, and this even before the major problems of labor and energy shortages become acute.

(Figure 1)

The first chart here shows what has happened to the real rate of growth, GNP growth over the last decade in the Soviet Union. There is quite a marked decline since 1978.

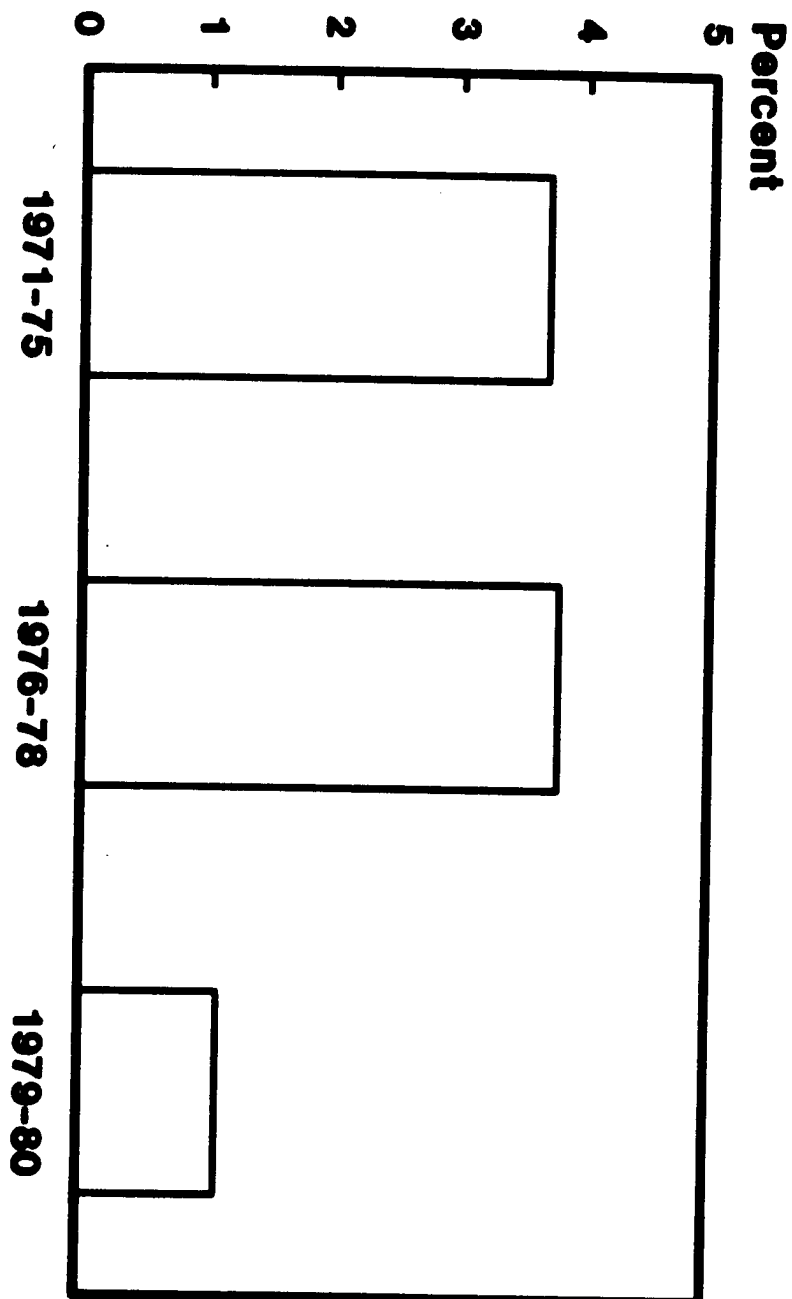
Senator Proxmire. That is interesting, to put it in perspective, I think our rate of growth would be rather similar.

Mr. Rowen. Actually over the period 1979-81 growth was slightly higher for the US.

This year, only a fairly weak rebound is expected, less than 2 percent growth for 1981. In part this is because agriculture is having another bad year, the third in a row. This year's grain crop is expected to be no more than 170 million tons, but the Soviet Union will be importing a great deal of grain, which means that meat production will not fall.

Industrial growth is slowing. Output growing only at 2 percent in the first half of 1981 compared with the year earlier, which was the second worst showing in the postwar period. So there is a very serious economic problem that the Soviet leadership faces.

USSR: Average Annual Rate of GNP Growth 1971-80



Unclassified
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Planned investment, during the 11th Five Year Plan (1981-85) will not be enough to sustain high rates of growth, especially given the slump in productivity growth.

Several critical sectors, such as energy, transportation, and agriculture are going to need a good deal more investment. But the planned overall increase in investment of 1.6 percent a year is very modest, indeed. That's less than the 3-1/2 percent a year achieved in the last five-year period of '76 through '80.

Our own U.S. defense spending plans have probably led the Soviet military to ask for more money, and then there's the cost of supporting the position of the Soviet Union in Eastern Europe, especially Poland, where the costs, quite evidently, are high, and the leadership is realizing this now, presumably.

I want to turn now to these four areas: agriculture, and energy, foreign trade, and defense sector. First, on agriculture --

(Figure 2)

Farm output in 1981 was roughly the same as in 1980, and it was below the 1976 level.

Actually, it was projected to grow a good deal over this period, so the shortfall is really quite serious. The Soviets had been hoping for a change in the weather, and have been relying on massive food imports to get along. The net imports of farm products nearly doubled between 1978 and 1980.

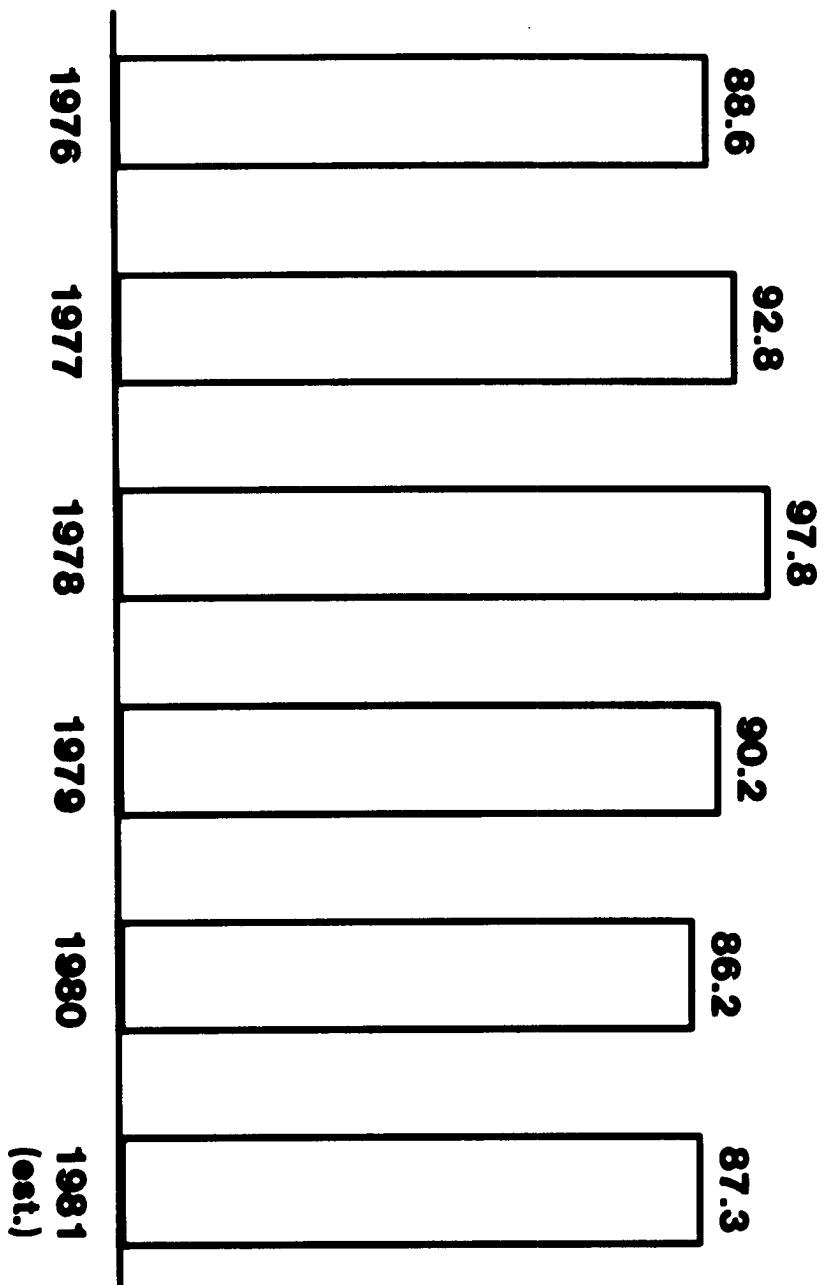
Senator Proxmire. May I ask, with more or less static farm output, how about the population -- number one, the population of the Soviet Union as a whole during that period? And number two, the number of people on farms.

Mr. Rowen. Perhaps could answer.

STAT

USSR: Value of Farm Output

Billion 1970 rubles



Unclassified
1/26/78, 2/2/77

[] Since 1975, the population has risen about 13-1/2 million in total, and the rural population, is currently about 98 million people.

STAT

There has been a slowing of the out migration from agriculture.

Senator Proxmire. So this indicates there has been no significant increase in farm output during the six-year period?

[] That's right. It's flattened out.

STAT

Senator Proxmire. The other question is: This is in rubles? Does that reflect accurately the physical production? Is the price level fairly stable? Or is the ruble distorted?

[] These figures are expressed in constant rubles.

STAT

Senator Proxmire. Oh, constant rubles.

[] These are constant 1970 rubles.

STAT

Senator Proxmire. Okay.

[] In current rubles, it would be going up, because they keep raising purchase prices to collective and state farms to try to induce them to boost output over time.

STAT

Senator Proxmire. This does reflect, then, the actual physical production.

[] That's right, sir.

STAT

Senator Proxmire. Very good.

Mr. Rowen. The leadership has not increased its share of investment going to the sector since the mid-1970s, and the current five-year plan suggests no change in the strategy in the next five-year period.

This attitude in the leadership, which is one of hoping things will get better, also apparently reflects the judgment that widespread popular unrest is unlikely. They have increased special distribution systems so that elite

groups and factory workers get the first crack at food supplies. This, of course, implies that there is less for others.

For the non-elite groups, supplies of quality foods are off. Black market activities, the second economy, reduces some of the pressure by assuring that those that have the funds and access can get something extra. However, the leadership may be too complacent in its attitudes because even with continuing large imports of farm products and return to average harvests, only a small increase in per capita consumption is likely.

Labor productivity is likely to suffer with continued shortages. There are several social indicators, indicators of health, that certainly suggest that the Soviet society is in trouble. Alcoholism will probably continue to increase. There is this rise in mortality rates, in part probably because of the heavy drinking.

And getting the hard currency to support massive imports of food and other consumer goods will be far more difficult in the 1980s.

Senator Proxmire. Do they have a drug problem like ours, or not?

Mr. Rowen. I think probably less of a drug problem in some ways.

But again, I would turn to an expert.

Very minor, from all anecdotal information we have.

STAT

(Security deletion) It doesn't seem to be of official concern or certainly not the level of drug usage of, say, in Western Europe.

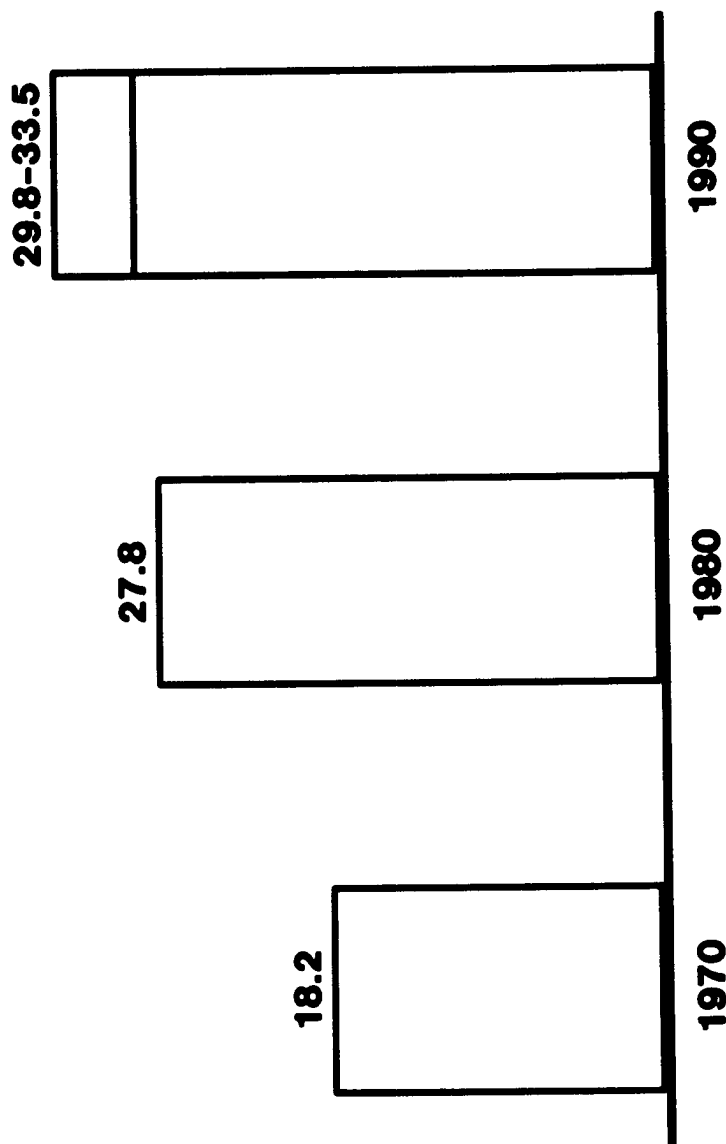
Senator Proxmire. Thank you.

Mr. Rowen. Let me turn now to energy, also a problem sector which is becoming more difficult.

(Figure 3)

USSR: Primary Energy Production

Million b/d oil equivalent



Unclassified
L68782.003

Here is a summary projection of Soviet energy growth expressed in millions of barrels a day of oil equivalent. As you can see, growing very sharply from 1970 to 1980, and then growing less sharply to 1990, up to the order of 30 million barrels a day equivalent by 1990. This is about 2 percent a year growth projected in the 1980s, compared with the 4-1/2 percent growth of the 1970s.

Oil is the principal problem. As I am sure you will recall, the CIA in 1977 forecast a downturn in Soviet oil production, and the sense of that still appears valid.

The Soviet plans call for production to grow at 1 percent a year through 1985. These do not seem feasible. (Security deletion) That is still a probable decline from present level, and the projected Soviet level, for that year.

We expect a further decline in the second half of the decade. The basic problem is that they are depleting their high quality reserves more rapidly than they are finding new ones.

Most serious is the decline in quality of the reserves. New production is coming from smaller fields, less productive strata, so they need to do a good deal more drilling per unit of oil that is produced.

And this increase in the amount of drilling required is so sharp that it appears that they will not be able to keep up with the rate of depletion of the existing fields, existing reserves.

Western equipment could help, and that explains some of the range of uncertainty but short term success in holding production high would also steepen the decline, when it comes.

They have other energy problems as well. Coal is certainly a problem fuel for them. Coal output has declined from a high of 724 million metric tons in 1978 to probably around 710 this year. And it's not a problem of reserves; it's a problem of reserves in the right locations in the country, and production.

Output will probably be no higher than 740 million metric tons by 1985, which is far short of the 770 to 800 metric million tons of the target.

Gas is the one major fuel in which the supply is elastic in the Soviet Union, after nuclear, which I will come to in a moment. By 1985, gas production of 10 million barrels a day in oil equivalent is expected, about one-third more than current. That's really quite an increase, and it continues at a rapid rate of development.

The resources required to develop this resource are quite large. They have to build six major trunk lines, each one of the order of magnitude or larger than the Alaskan Oil Pipeline. And in today's dollar, just to get a benchmark figure, it would take about \$10 billion to build an Alaskan pipeline, so we are talking about six of these over the next five-year period.

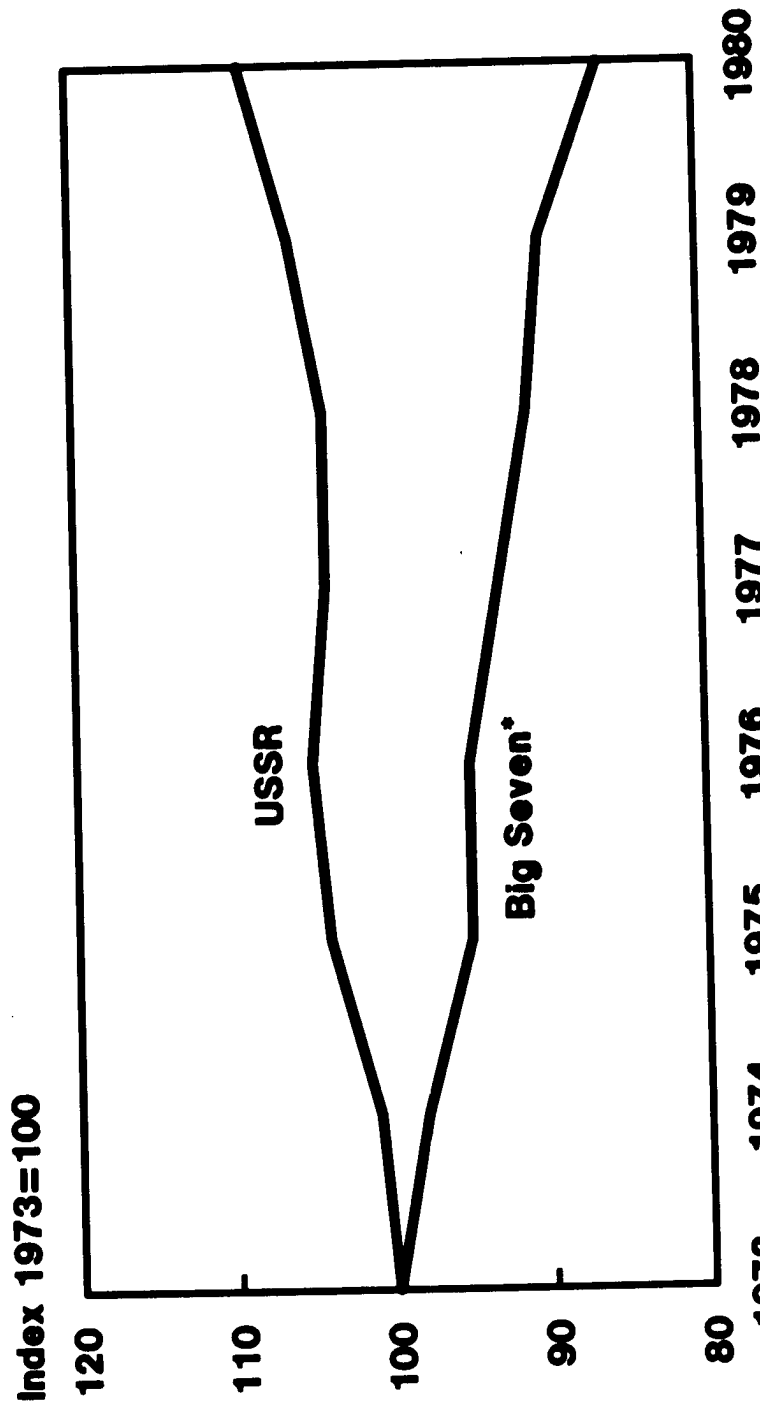
One of the most interesting observations to make about Soviet energy is suggested in this next viewgraph --

(Figure 4)

-- comparing the energy-GNP ratio of the Soviet Union as against the major industrialized countries' trends over time. The Soviet Union is the only major industrialized country that has not economized in its use of energy since the world price of oil went up in 1973.

You can see how it's grown by about 10 percent per unit of economic output, whereas in the Western industrialized countries, the decline has been

Energy/GNP Ratios



* The Big Seven includes the US, Canada, West Germany, France, Great Britain, Italy, and Japan.

Unclassified
L00702.004

of the order of 15 percent per unit of output. As you know, it is still declining. The West is getting more and more efficient in the use of energy and the Soviet Union appears to be on a trend in which it's getting less and less efficient.

And the gap between these two economic systems, as shown on the right-hand side of the graph, is really enormous.

Senator Proxmire. Of course, one reason, I take it, I guess, is because the Soviet Union does not import oil and we do; is that right?

Mr. Rowen. I think that has nothing to do with it. It's not just the United States; it's Japan, Canada, West Germany, France, Great Britain, and so on. It's really a collection of Western industrialized countries that are very different in their oil-importing propensity.

Senator Proxmire. But overall, in the aggregate, the Big Seven do import a substantial proportion of their oil. Right? This country imports what, 45 percent. The Soviet Union imports nothing; is that correct?

Mr. Rowen. That's right.

But if one took Canada, for example, which is very close, probably, in that regard, to the Soviet Union --

Senator Proxmire. But they're not broken out here.

Mr. Rowen. Not separately. But Canadian efficiency has improved, despite price controls, which has not helped to improve their efficiency.

Senator Proxmire. Isn't it true the Canadian economy is enormously influenced by our policies, because they're so close, so interrelated in every way?

Mr. Rowen. Certainly. They are tied very much to ours.

I think it has really very much more to do with the use of the price mechanism in the Big Seven and the nonuse of the price mechanism in the Soviet Union.

There is another perspective on that chart. If the Soviet Union had followed the Big Seven trend in the energy-GNP ratio, in 1980 they could have saved a quantity of energy equivalent to \$60 billion in current world market prices. This reflects the difference between the increase in energy use per unit of GNP of 10 percent between 1973 and 1980 compared to reduction of 15 percent for the Big Seven.

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Senator Proxmire. How does their per capita consumption compare to our per capita consumption?

It's about three-fifths of ours.

STAT

Senator Proxmire. Similar to the per capita consumption of European countries?

Surprisingly, the Soviet per capita consumption of energy is roughly 40 percent above the per capita level in Europe.

STAT

Senator Proxmire. About the same? I see.

But whereas western industrial societies are improving, that is, they are gaining in efficiency, the Soviet Union is becoming less efficient? You say the reason is because we have a pricing mechanism that imposes discipline, and they don't have that?

Mr. Rowen. Exactly. In fact, for the most part the use of energy is not even metered. The use is not even measured. So how can there be an incentive to economize, if the system doesn't know how much fuel it's really using at the point of use.

That's another graphic example.

Senator Proxmire. Even in their industrial use, they don't meter it?

They don't meter consumption in the household sector, the one sector that does pay attention to prices in the Soviet Union. Neither electricity or gas are metered, in general. Even if they introduced widespread metering in the industrial sector, the typical plant manager has little incentive to pay attention to costs.

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Mr. Rowen. There is, of course, between the Big Seven and the Soviet Union, a marked difference in the distribution of energy. That is the types of uses as shown in this Vugraph.

(Figure 5)

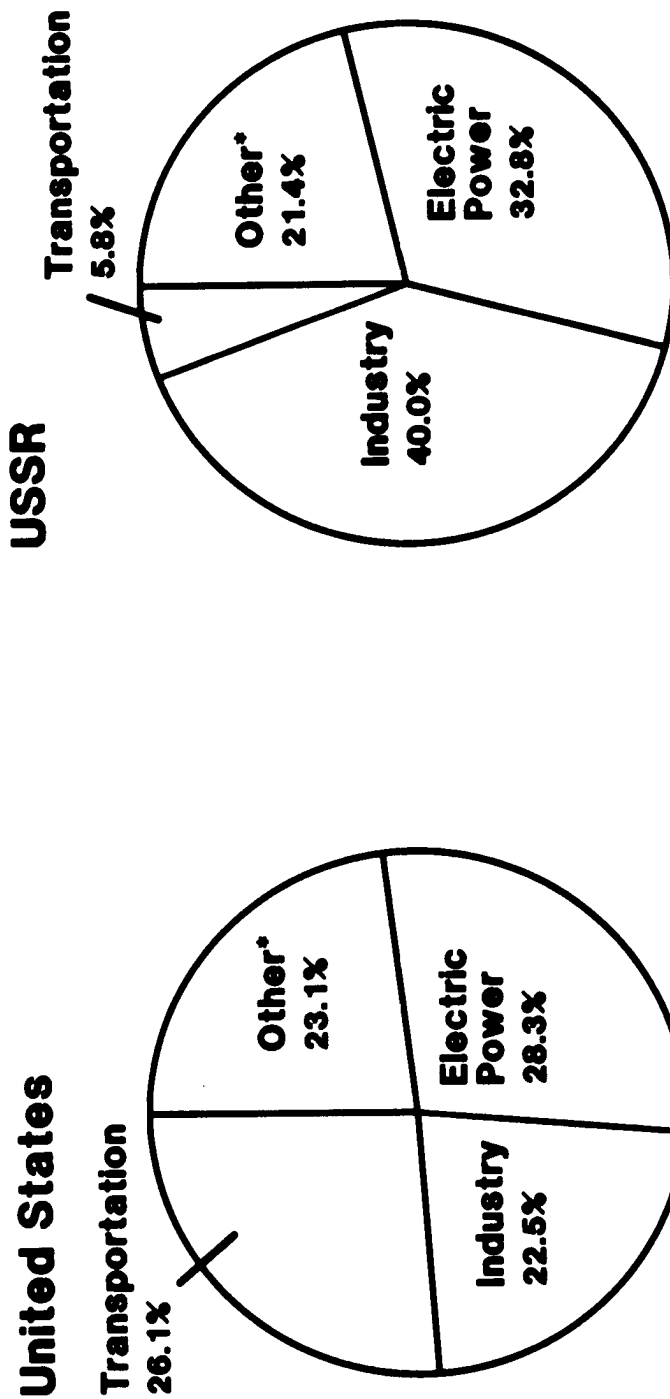
As you see in the West, transportation looms quite large, and industry proportionately very much less than in the Soviet Union.

The Soviet Union is finding it exceptionally difficult to economize in these major sectors.

In principle they have the possibilities for conservation and for shifting the pattern of energy use, but the evidence in the record so far, as shown in the previous graphic, is that they seem to have been incapable of doing it, and there is no reason to believe in the next decade that they are going to get any better. It will take a long time.

Let me turn now to their hard currency problem. Because of a strong hard currency position during the last two years, largely caused by a favorable shift in the terms of trade, Moscow has been able to turn to its foreign sector for relief from its domestic problems. Total hard currency earnings largely from energy, gold and arms sales reached \$30 billion in 1980. These earnings helped to finance, (a) the agricultural imports needed to prevent a deterioration of the Soviet diet, (b) importation of steel to offset domestic

United States and USSR: Gross Energy Consumption, 1975



* Other includes agriculture, construction, and heating for residential, commercial, and government buildings.

Unclassified
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production shortcomings, and (c) purchases of equipment and steel pipe which allowed a stepup in investment in exploitation of critical energy resources.

However, this favorable period may be at an end, and this year Moscow's trade position has turned worse. Its trade deficit in 1981 could double to between \$5 and \$6 billion as another poor harvest pushes up agricultural imports, and softening demand for energy and other raw materials in the West is cutting earnings from dollar sales.

(Table 1)

Their experience in hard currency earnings is shown in table 1. Their imports which you can see were running around \$14 to \$16 billion in the period 1976-78 shot up in the 1979-81 period.

Of course agricultural imports was a major part of this increase and the share of agricultural imports has gone up quite considerably.

Part of their ability to finance these hard currency imports was obviously affected by the sharp increase in the price of oil beginning in '79 as the collapse of Iranian production helped to drive up the world price to the Soviet's benefit.

This year, Moscow's total food bill will reach almost \$12 billion, or over 40 percent of Moscow's hard currency imports. Despite the developments in the trade account, we expect Moscow to close out 1981 with a current account surplus, although much smaller than 1980.

Earnings from services, arms exports and gold sales should more than offset the \$5 billion trade deficit and the higher import payments on the foreign debt. However, if the trade trend evidenced in the last several years continues, they could find themselves in a hard currency bind within a few years.

USSR: Hard Currency Imports*

	1976	1977	1978	1979	1980	1981**
Total Hard Currency Imports (billion US \$)	14.8	13.7	16.6	21.2	26.2	29-30
Agricultural Imports (billion US \$)	4.1	3.2	3.8	5.5	8.8	12.5
Agriculture's Share of the Total (percent)	27.7	23.4	22.9	25.9	33.6	41.7-43.1

*Current prices

** Estimated

Unclassified
L68702.006

Their export picture is not bright. Oil export earnings will be squeezed by stagnant or falling production, rising domestic consumption, and probably a weaker world price of oil.

The Siberian gas pipeline to Western Europe, the only potential large earner of foreign exchange, will not be fully operational until 1986 or '87 at the earliest. Some potential may exist for increasing arms sales. Last year they booked \$14 billion in new military contracts.

But, their export picture generally is not bright for other products.

Thus, in the near term, Moscow will have to rely more on gold sales and on borrowing from Western banks, if it is to avoid the task of cutting imports of agricultural products and of capital goods.

Senator Proxmire. Have you made any analysis of what effect the adoption of a gold standard by this country might have on the Soviets?

No, we haven't, Senator. For the record we will respond on that. STAT

Senator Proxmire. We would appreciate that very much. As you know, there is a Commission meeting on that in the Banking Committee, of which I am the senior member, the Senate Banking Committee. We will have a lot of responsibility in that area. I think it will be very helpful to have your thoughts about it.

Yes, we will provide that answer. STAT

(The following information was subsequently supplied for the record:)

A Strict Gold Standard and Potential Destabilizing Factors

The prime requisite for a gold standard is that the central bank or treasury buy or sell unlimited amounts of gold at fixed prices. Moreover, the buying and selling price must be practically the same, and imports and exports

of gold bullion or coins must be permitted. A gold standard can be operated in a number of ways. Under a gold coin standard, gold coins circulate freely and can be bought or sold at the central bank or treasury. Another alternative, in which gold bullion is not used as money, is for the treasury or central bank to buy or sell bullion at fixed prices.

In theory, under a strict gold standard, inflows/outflows of gold to/from the central bank lead to an automatic expansion/contraction in certain categories of central bank liabilities, such as currency and deposits at the central bank. Changes in these central bank liabilities produce corresponding changes in the money stock.

With a strict gold standard, certain central bank liabilities¹ can be either fully backed by gold or backed at a fixed fraction. In the latter case, a \$1 change in central bank gold holdings will cause a multiple change in central bank liabilities, which in turn causes a multiple dollar change in the money stock. For example, given the 1980 average money multiplier in the United States for M1-B--2.5--and a fractional gold standard of \$1 of gold for every \$2 in currency and deposits held at the central bank, an inflow of \$1 worth of gold would lead to an increase of \$5 in M1-B.²

Under a more flexible gold standard, the central bank can offset inflows and outflows of gold to some extent. If the purpose of a gold standard is to restrict central bank activity, any flexibility granted to the central bank tends to undermine the credibility of the gold standard.

¹ The liabilities subject to gold backing can differ. For example, gold could back only currency issued or it could back all central bank liabilities.

² A \$1 increase in the monetary stock of gold results in a \$2 increase in central bank liabilities. With a money multiplier of 2.5, $\$2 \times 2.5 = \5 .

When gold was sold at a fixed price during the era of the gold standard, gold production tended to increase whenever deflation occurred, since deflation lowered production costs and made the mining of gold more profitable in the country on a gold standard. The subsequent increase in production raised the money supply, which tended to halt or slow the deflation. In time of inflation the process worked in reverse, ultimately causing inflation to subside.

An impediment to a present-day gold standard is the loss in the downward flexibility of prices and wages. Any reduction in the growth of aggregate demand, caused by a stagnant or declining monetary gold stock, would lead to a reduction in economic growth rather than to deflation. In addition, about 75 percent of gold production today is controlled by the Governments of South Africa and the Soviet Union, which produce or sell gold according to considerations other than the short-term profit motive and thus impede the automatic self-adjustment that was inherent in the gold-standard era.

The likelihood that the Soviet Union would intentionally try to disrupt a gold standard seems minimal. The USSR's gold sales fluctuate in proportion to its need for hard currency and the alternative cost of external borrowing. Even if the Soviets decided to withhold gold from the market, there would be little effect on the operation of a gold standard. Recent Soviet gold sales have been relatively small compared to the total supply of gold coming into the market. On the other hand, the USSR is unlikely to sell off its entire gold stock in exchange for foreign currency, since Moscow has been particularly wary of foreign-currency depreciation. If the Soviets decided to sell their gold holdings, however, a central bank could temporarily disobey the rules and offset any undesired increases in the money stock by open-market

sales of government securities with little, if any, loss of credibility in the gold standard. Unlike the case where the proportion of gold that backs central bank liabilities is reduced an increase in the proportion would probably not result in a loss of confidence in a gold standard.

A strict gold standard would be susceptible to large private speculative gold purchases and shifts in demand for gold by official and private institutions. If investors believed that the gold ceiling price set by the central bank could not be maintained, there would be a sudden surge in the demand for gold. The outflow of monetary gold would call for a reduction in central bank liabilities, resulting in a rise in interest rates and a contraction of the money stock until the gold flow reversed direction.

A relatively small amount of net gold purchases from the monetary stock could substantially affect the money stock and national output if the gold outflow could not easily be reversed. For example, if a gold standard in the United States required that Federal Reserve notes and deposits at the central bank be backed by gold and if the price of gold were set at \$450 an ounce, the present US gold stock would be sufficient to back every dollar of the Federal Reserve liabilities with approximately 78 cents worth of gold at June 1981 levels. If this ratio was maintained, a \$1 billion gold purchase from the monetary stock would call for a \$1.3 billion reduction in central bank liabilities and an approximately \$3.2 billion drop in M1-B (0.75 percent), given the average money multiplier for 1980.

Mr. Rowen. Let me turn to the fourth sector to be discussed, the defense sector.

The key question on defense is whether or not we will see more rapid growth in defense spending to match new U.S. programs, or will it continue to

grow at a historic rate of 4 to 5 percent. Or, will the growth in this sector slow down during the course of the 1980s.

Current evidence points to the Soviet defense sector continuing to grow at its historic rate of 4 to 5 percent. The evidence here includes weapons, production and testing underway as well as programs currently on the drawing board.

This, of course, given the economic scene that is portrayed, means an increasingly high cost to the rest of the economy of the large and continued defense programs. By the mid-1980s, this implies a slowing in annual increases in per capita consumption, in all likelihood, for its citizens. If the Soviets opted to reduce the growth of their defense budget, some bottlenecks might be eased, but their basic economic problems would remain.

(Table 2)

Table 2 shows for several industry sectors, the kinds of related civilian lines that they have, and close related production technologies. You can see for high technology types of weapons, (security deletion) missiles and aircraft and so on, the types of civilian lines that are related in some way in character to the weapons.

(Security deletion)

For many of these defense industry categories, there are quite close civilian products, which could be expanded if the military would be cut back.

But such a shift would be opposed by powerful defense interests and would carry political risks as perceived by the leadership.

We have to recognize also that given the tremendous size of military procurement -- more than one and a half times the size of ours in recent years -- even freezing the growth rate would have little impact on any existing stocks of Soviet weapons.

Table 2

RELATIONSHIPS BETWEEN DEFENSE AND CIVILIAN INDUSTRIES

MILITARY PRODUCTION

RELATED CIVILIAN PRODUCTION

Missiles and Aircraft

Civilian Aircraft

Naval Surface Ships

Pumps, machine tools,
mining equipment

Submarines

Pumps, machine tools,
mining equipment, large
diameter pipe

Tanks

Construction and trans-
portation equipment

Other Armored Vehicles

Construction, agricul-
tural and transportation
equipment

Artillery

Construction, agricultural
and transportation equip-
ment; and machine tools

Senator Proxmire. How do you determine -- when you say it's one and a half times ours, how do you make that comparison?

Mr. Rowen. That's, of course, an aggregate that's built up by examining a very large number of types of weapons.

Senator Proxmire. It seems to be it is so very difficult to do that because of the difference in the composition of even similar weapons systems like aircraft. For example, some of our fighter planes cost such a tremendous amount compared to what they cost in the past. They have in them such complicated systems in all kinds of ways, that it seems to me to try to compare one or two or three or four aircraft of the Soviet Union with one, two, three or four of ours wouldn't really tell you very much about how much in resources we put into our procurement, and how much in resources they put into theirs.

Mr. Rowen. Perhaps [] can tell you the method used.

STAT

[] Senator, that particular figure is based on our extensive effort to dollar cost the Soviet military hardware procurement program. So it is the aggregate figure based on Soviet military procurement in real resource terms as measured in dollar prices.

STAT

Senator Proxmire. Let me see if I understand what you are saying.

Does that mean what you try to do is determine how much it would cost us to produce the number of tanks they produce, for example?

[] Exactly, Senator. In past years, we have given you extensive briefings on our dollar cost estimate -- its methodology and results.

STAT

These data are based on that methodology -- the basic concept being what it would cost in the U.S. to produce the Soviet military hardware.

Now the situation would be very similar, although not quite as pronounced, if you were going to make the same comparison in rubles.

Senator Proxmire. But, to the extent that our technology is ahead of theirs, it could be that we have an unmeasurable quality of advantage, or maybe not.

[] I think you are referring to the discussion we had last year, to the infinite price problem. In other words, if there is a product which can be produced in one economy but not in the other, then in theory the price of that product is infinite.

STAT

Senator Proxmire. It is just not comparable.

[] In theory it would be infinite. We just could not put a price tag on that. You can put all the resources in the world on it, but if you don't have technology to put it together, you couldn't build it.

STAT

Nevertheless, we have handled that -- as [] discussed last year -- the same way one handles a temporal comparison for a single country. For example, in the U.S., if there was a product produced in 1980 that could not be produced in 1970, the constant price of that goods in 1970 prices in theory would be infinite.

STAT

But we handle this problem the same way we have handled all international comparisons, and that is to use an exchange rate, implicit exchange rate, which is derived using the nearest applicable product which can be produced in both time periods or both countries.

Senator Proxmire. Can we or can we not make a general conclusion that we do have an advantage in most military technology areas as far as industrial technology areas, and that we may not fully reflect the difference between the Soviet's procurement and the capability of that procurement compared to ours.

I would say that we have bounded the problem, Senator, by looking at the comparison in ruble terms and the comparison in dollar terms. In ruble terms our results are that the Soviet defense spending is roughly 30 percent greater than U.S. In dollar terms it is roughly 50 percent greater than U.S.

STAT

The ratio of the dollar cost of all Soviet defense activities to US defense spending for 1979 is 1.5 to 1. The same comparison made in ruble prices is 1.3 to 1. These figures yield an index number spread of 15 percent (1.5 divided by 1.3 equals 1.15).

Senator Proxmire. Now you are shifting it, saying defense spending. I was thinking about procurement.

The ratio of the dollar cost of Soviet procurement of weapons and equipment to similar U.S. spending is about 1.6 to 1. In terms of ruble prices, the ratio is about 1.3. These figures yield an index number spread of about 25 percent.

Senator Proxmire. See, I am trying to stress technology. Obviously, if we try to reproduce the Chinese army -- we went through that, I guess, the last time --

Yes.

STAT

Senator Proxmire. -- The cost to us would be greater than we are spending on defense, in spite of the fact that it is clear that our military force, the Soviet military force is vastly superior to the Chinese.

So that I think it is hard to make an assessment that because they are spending more money, or because they are spending more of their resources, if they do not have the technology, may or may not mean that they have a superior military force.

[] Once again, Senator, all I can say to that is that you face STAT
the same issue when you do Western economic analysis in the U.S. on growth in
gross national product over a period of time. In fact, in the U.S. the
Department of Commerce uses some 500 price indices to deflate a roughly \$3
trillion GNP or roughly one price index for every \$6 billion.

When we convert U.S. defense spending to rubles, we use one exchange rate
for every \$3 billion.

In other words, in those aggregate terms we are using twice as many
exchange rates just to capture the factors you noted. When we estimate Soviet
defense activities in dollars, we use extensive industrial engineering
analyses to be able to capture the Soviet technology.

Senator Proxmire. Does that really deal with the problem I raised in
comparing, for instance, the Chinese economy, Chinese military with our
military; or the technology in Russia with the technology in this country?

Mr. Rowen. In the case of the Soviet Union, I wonder if it is an
empirical question as to whether there are that many weapon types. Where it
is our estimate that the Soviet Union would not be capable of building
something comparable. I would have thought that is not so any more. Soviet
technology has been improving. But that is really not quantitatively such an
important point now. Perhaps it was 20 years ago.

[] That's an excellent point, and the analysis we have done on STAT
that -- and we have done quite a bit over the last 20 yers -- has shown that
in terms of the total production -- the total number of systems being produced
in any given period of time -- this "infinite price problem" is very small.

Senator Proxmire. Will you submit the data that you have on that point
for the record?

And secondly, do you have a comparison between the Warsaw Pact expenditures and the NATO expenditures, and how would they compare, roughly.

We will submit for the record information on the relative levels of technology.

STAT

(The information was subsequently supplied for the record but deleted here for security reasons.)

On the NATO/Warsaw Pact comparisons, I am sorry to report that the situation is exactly as it was last year when this issue was raised. Because of resource constraints, we have not engaged in a direct dollar costing of non-US-NATO countries or the non-Soviet-Warsaw Pact countries.

STAT

Senator Proxmire. Why wouldn't that be of very great significance and worth applying resources to develop it?

It seems to me that any realistic situation we can imagine would very likely involve both Warsaw Pact and NATO forces.

I think the question here, Senator, is why do we do the dollar costing and ruble costing in the first place. When we do dollar costing we are essentially trying to size the Soviet effort for US policy makers in terms which are familiar to them. That's why we use dollars.

STAT

When we make ruble estimates, we are trying to assess the economic impact on the Soviet Union to get an idea of their resource commitment to defense.

Senator Proxmire. It goes farther than that. Look at it from my standpoint. It's a question of whether we are spending enough so that we are comparable with the Soviet Union. And in doing that we look at the defense contribution of England and Germany and Italy and the other NATO countries. We have to look at that in a limited way. We at least have to have that in the back of our mind.

[] But you are looking primarily at military capabilities when you say, "Isn't US defense spending sufficient for its requirements." You are dealing primarily in an effectiveness scenario.

STAT

In other words, if you ask "are US military forces sufficient to perform their required duties?" you are not really interested in resource commitment, but rather in the military forces in being, the morale of the troops, the effectiveness with which they would be deployed.

So, in the NATO-Warsaw Pact comparison that you are discussing here, I would think you really would be much better served by looking at the military forces in being and their capability.

Senator Proxmire. I think we would be well served in that, too. But you constantly run into the criticism, or the argument in our country, that the Soviet Union is spending far more than we are and that the Soviet forces, the communist forces--meaning the Warsaw Pact forces--are outspending the free world in the military area, and investing more.

And I think that that may well be true. But, unless you have some notion of what the far wealthier NATO forces are actually spending compared to the far poorer Warsaw Pact, we don't have a comprehensive picture of this at all.

Mr. Rowen. I agree with you, Senator. The subject does come up, and that makes it relevant, obviously.

Senator Proxmire. And it very greatly conditions our policies. Presidents are elected or defeated on this; members of Congress are elected or defeated on the issue. They carry into a determination of what we are going to do on our appropriations and authorizations in the military areas and other areas, the kind of conviction that the American people have.

[] If I could note --

STAT

Senator Proxmire. And that comes to a very great extent, from your analysis.

Although the CIA does not prepare such an estimate, the Defense Intelligence Agency has prepared dollar cost comparisons of NATO and the Warsaw Pact, so they are available to the US Government.

STAT

Mr. Rowen. We will see what we can get you on this.

Senator Proxmire. I would appreciate that.

(The following graphic was subsequently supplied for the record:)

(Figure 6)

Mr. Rowen. It is relevant, obviously. A most obvious question, however, about the relevance of the comparisons of the alliances on both sides, really has to do especially in the 1980s, with whether one really expects either of these systems to act in a unified way, and that is certainly a question.

But the comparison, nonetheless, is a relevant one.

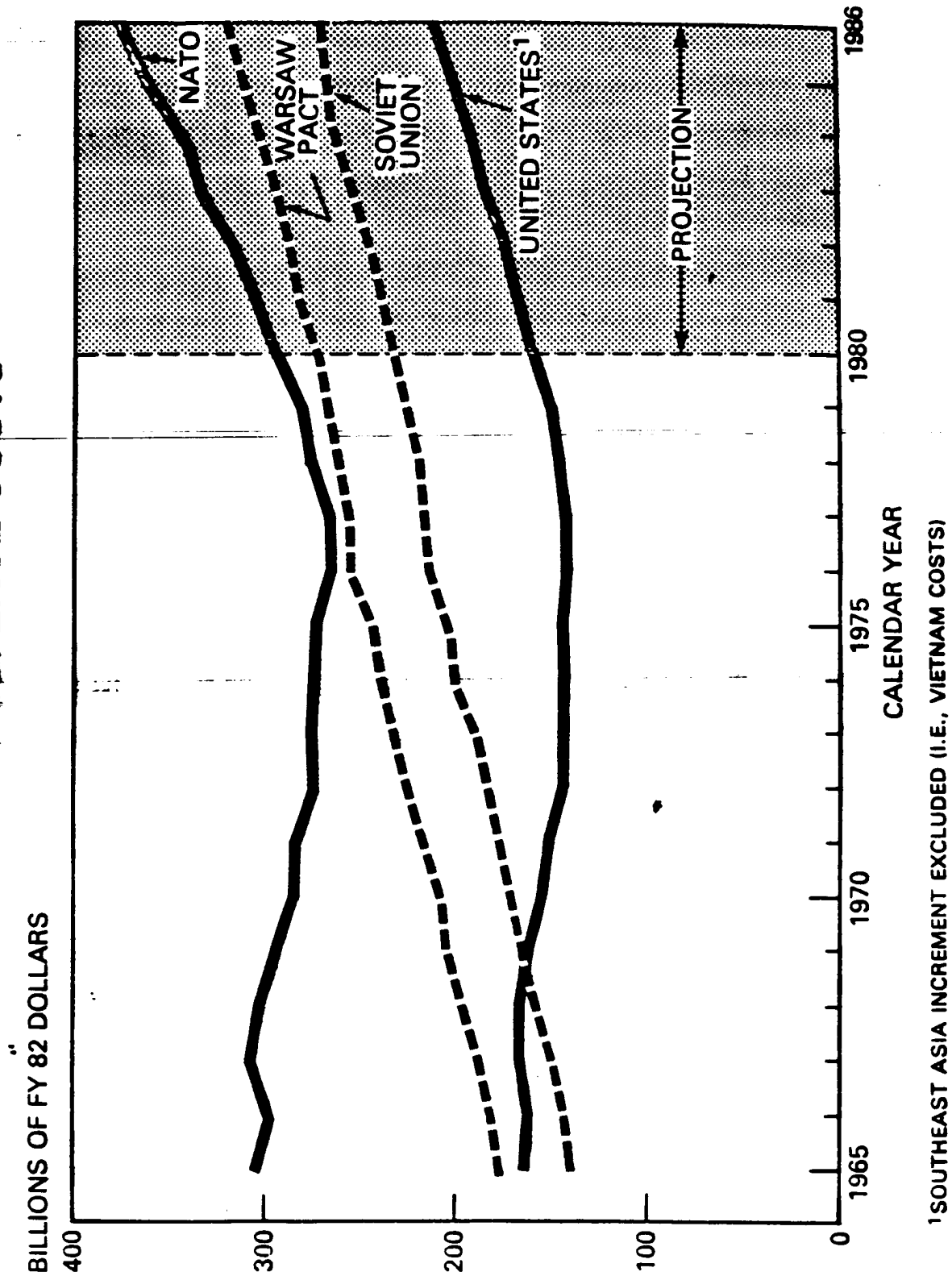
Senator Proxmire. Go right ahead, sir.

Mr. Rowen. One possibility is that the Soviet Union will choose to accelerate defense spending about its current rate of 4 to 5 percent annually, because of what they view as a deterioration in the international climate. That is, they might develop additional weapons, make additional investments in defense industries, to produce more weapons, in the mid and late 1980s.

However, I think it's evident from everything that we have said here that this would impinge on the Soviet civilian economy especially hard; that consumer durables, services, and housing would be likely areas for cutbacks; and it would have a severe impact on labor productivity prospects.

As I think this presentation suggests, the pressures indeed will be there, and growing, for them to reduce rather than to expand. They face

COMPARISON OF NATO AND WARSAW PACT TOTAL DEFENSE COSTS



Source: Annual Report Fiscal Year 1982, Department of Defense, p. C-12.
Note: Such estimates are not constructed by the CIA.

really quite a dilemma. So in sum, I would simply say that the Soviet economy is in real trouble, and its problems are becoming progressively more severe.

And perhaps most importantly, I would say, in contrast with the United States economy, there doesn't seem to be any light visible at the end of the tunnel in the Soviet Union.

Senator Proxmire. Now, several years ago the CIA described the problem of water flooding of the giant field of Samotlor, and the inefficiency of Soviet oil production methods.

Were you correct in that diagnosis?

Water flooding is an accepted strategy worldwide for improving oil recovery. Regarding Samotlor, we had a specific error in our 1977 report about the water cut, which we acknowledged and corrected several years ago.

STAT

(Security deletion)

Having said that, I think we may have made too much of water flooding problems in the past. The Soviets have done some damage, but probably not vast damage, as may have been implied previously.

Senator Proxmire. Along the same line, it is now October 1981, and the oil production rate is still about 12 million barrels a day. That's considerably higher than the CIA thought it would be back in 1977.

Would you explain why you dispute the argument that the Soviets are controlling the level of production at the rate they desire, and that they could produce at a higher rate if they wanted to?

And also, explain what evidence there is that there will be a decline. And when do you believe the decline will begin?

[] Let's take one question at a time. I have not heard the argument that the Soviets are controlling production levels at desired rates articulated in detail.

STAT

Senator Proxmire. You haven't heard people arguing that they could produce at a larger rate, if they wanted to?

[] I have heard it in general terms, not in specifics as to where in the country such control might be occurring.

STAT

I believe that argument can be refuted in several ways. I'll give two. Note, however, that in the strictest sense the argument is true but immaterial. Strictly speaking, few fields in the world are produced at maximum instantaneous rates. For a variety of technical reasons, such an operational mode could not be sustained for long, and hence the added investment for equipment to support such rates is not warranted.

An obvious refutation can be developed by considering Soviet success relative to production plans. At the beginning of the 10th five-year plan, in 1976, the 1980 target for oil production was 620-640 million tons (12.4-12.8 million b/d). By the start of 1980 this target had been lowered to 606 million tons (12.12 million b/d) because of many supply-side problems that arose in the intervening years and not because of decreased demand. Even after this drastic reduction, reported actual production in 1980 was only 603 million tons (12.06 million b/d). Surely the Soviets would have turned on reserve production capacity to make up at least the 3 million ton deficit had such capacity been available.

A second and more technical refutation comes from a consideration of Soviet producing capacity. (Security deletion) The reported rate of decline had risen to about 15 percent in 1978. (Security deletion) Such a decline is

incomparable with the notion that production could be increased significantly, since a conservative production policy would translate into relatively minor declines in installed capacity.

Your second question was about what evidence there is that there will be a decline.

Our forecast of a decline in Soviet oil production is a judgment derived from in-depth study of a sizable body of data.

Outside West Siberia, Soviet plan figures for the low end of the target range anticipate a drop in production of 1.1 million b/d, essentially matching the decline during the 10th five-year-plan period, when annual declines averaged 220,000 b/d. Annual declines have been increasing, however, with drops of 300,000 b/d in 1979 and 250,000 b/d in 1980.

In the long run, the Soviets need to find large fields that can be developed cheaply to ease the investment burden. We do not think the chances of such success are high.

Your third question was when do we believe the decline will begin. We estimate that the decline probably will begin the next three years. At the outside, the Soviets might succeed in holding production near 12 million b/d through 1985. We are assuming that discoveries in hand, but no new discoveries, must support production through 1985.

Senator Proxmire. The Defense Intelligence Agency has a much more optimistic--that is, optimistic from the Soviet Union's standpoint--forecast of Soviet oil production. They predict there will be a steady, although very moderate, increase throughout the rest of the decade.

There are two differences between our forecasts. First DIA STAT believes that Soviet leaders and oil experts have a solid long range understanding of the magnitude of the problems they face. We do not.

Our second fundamental difference is that DIA believes the base of discovered reserves is adequate to sustain high production levels through the decade and beyond. Again we do not.

Senator Proxmire. Well, give me the figures on your estimate of Soviet oil reserves, and the DIA's estimates, and why is there that difference?

DIA told us 80 to 85 billion barrels of reserve. What's yours?

Our estimate is somewhat lower than that.

STAT

Senator Proxmire. DIA's testimony discusses the new Salym field, which-- reserves are discussed as enormous, and estimates this field will be brought into production in five years.

Will you comment on the Salym field?

The Salym field was discovered in 1965. It is essentially an oil shale, two miles deep. The Soviets have drilled it, trying to establish commercial production, but they have as yet been unable to do so.

STAT

(Security deletion)

In short, we have seen no evidence that they have overcome basic technical problems to date, and hence no evidence that that field will ever be commercially productive.

(Security deletion)

Senator Proxmire. What's your assessment of the risks that West Germany, France, and other NATO allies may become overly dependent on the Soviet Union for natural gas?

Mr. Rowen. Let me respond to that one. The policy of these countries is to limit their dependency. In the case of Germany, the figure that's been stated has been of the order of 30 percent--no more than 30 percent of natural gas; would be like 5 percent of total energy. And I believe a somewhat similar proportion for France and other European countries.

This, of course, is a limitation they have imposed for the reason you suggested: They do not want to be too dependent on the Soviet Union. These governments have taken the position that their alternatives on dependence on natural gas, or oil, for that matter, is worse. That is, dependence on unreliable Persian Gulf oil, or gas from Algeria.

Our own view has been much more reserved and cautious than the view of these governments, and it has seemed to many people in this government that in fact the dependence of these countries would be rather substantial, or could become substantial, that some leverage, political leverage, would be created on the part of the Soviet Union. It's not leverage that they could readily exploit, because if the Soviets were to likely shut off the supply of gas, that would have very bad effects on all economic transactions between the West and East. Also, they need to sell it as badly as West Europe needs to buy it.

So, it is not an easy thing for them to manipulate.

Senator Proxmire. Isn't that also a compromise? You say--and the Administration is attempting to discourage our European allies from entering into new natural gas agreements with the Russians. But we are selling the Russians more grain than ever.

From the standpoint of the Soviet economy, is there any difference between the two types of trade? How does Moscow interpret what has been described as an inconsistent attitude about East-West trade on our part?

Mr. Rowen. Energy, of course, is a purchase, by Western Europe, and the grain is a sale by Western countries. But there is a difference in the nature of the part of the transaction.

Senator Proxmire. But they get awfully dependent on that sale.

Mr. Rowen. Well, the argument on the energy is that if the gas were to be shut off, and it were to amount, say, to 30 percent of West Germany's gas, for example, and if this were to occur at the same time as a disruption of oil supply from the Middle East--and it is quite conceivable that it could occur at the same time--then the effect on the West European economies would be devastating.

And there is no question it would be devastating, if a combination of these events would occur. Economic output would rapidly plummet, unemployment would grow enormously. So there is a vulnerability, potential vulnerability, not just to gas alone, but gas plus other disruptions.

Senator Proxmire. How would that compare with the effect on the US economy if the Soviet Union stopped buying grain from us?

Mr. Rowen. I have not done such an estimate. I don't know anyone has done such an estimate. But by comparison, I have done some work, not at my present job, but a previous one, looking at the impacts on the Western European economies of various energy disruptions. And the magnitude of cuts can be very large, indeed--much, I would conjecture--much larger in terms of losses than any likely impacts from reduced sale of grain.

But that's just a pure guess on my part. I certainly haven't done the work.

The vulnerability of industrialized economies to energy interruptions, as we have seen in this country, after all, in 1973, and then again in '79 and '80, is really very high.

Senator Proxmire. To what extent has the Soviet invasion and presence in Afghanistan diverted resources such as rail transportation from the civilian sector? And are these diversions, in direct military cost, a significant burden on the economy?

If Afghanistan had never come about, Senator, the Soviet transportation system would still be under consider strain. As you know, it is highly dependent on rail as a means to move goods around the country. It's a very taut, high-density system. The logistics associated with the Afghan operation don't bulk that large, but when you have such a taut, highly strained railroad system in terms of ton-kilometers capacity, any additional load, even at the margin, any additional imposition on that system is obviously going to be quite disruptive.

STAT

(Security deletion)

Senator Proxmire. To what extent is the economic slowdown a product of investment decisions made in the past decade or so, which emphasized defense production at the expense of the transportation, energy, chemical, agricultural, food-processing sectors? Is it "the" major principal reason for the decline, would you say?

Today's basic priorities were established when Brezhnev and his colleagues assumed power in October 1964, and they set in train a basic set of decisions on what military capabilities they wanted -- force composition and force strengths, effectiveness and overall level of stock of defense weapons. We have observed over the last 15 years, a near doubling of defense expenditures -- a 90 percent to 100 percent increase in defense outlays -- to meet these goals.

STAT

You have to ask yourself a hypothetical question to answer your question. For example, if they had held defense procurement constant at its 1970 level during the 1970s, and diverted the additional output of defense durables into output of producer durables for investment purposes, what would

have been the impact on capital stock and GNP by 1980? We calculate that some 50 billion rubles of additional reproducible fixed assets could have been put in place by 1980, equivalent to less than 5 percent more capital stock. In other words, additional stock of plant and equipment that could be used in transportation, chemicals and other civil sectors of the economy. Under this set of conditions, Soviet GNP might have been some 1-2 percent larger in 1980.

Senator Proxmire. To what extent does defense spending explain the failure to increase the output of civilian machinery and the shortage of steel, cement and other basic materials?

We have a Table on that, on trends in civilian versus military procurements -- military machinery.

STAT

(Table 3)

As you see here, in the last half of the '60s, civilian machinery is growing at more than twice the rate of military machinery output. That same relationship held up in the first half of the '70s -- and indeed, up to 1978.

Senator Proxmire. Extremely volatile, the military component goes up between '66-'70, and '71-'75, and then down very sharply. And way up in the following period.

Yes, that's driven mainly by major procurement cycles of strategic systems; major systems -- submarines, ballistic missile systems for the submarines -- and also underlying it is cycles in aircraft procurement.

STAT

Senator Proxmire. Can you make any kind of projection -- what that is likely to be in the next five years or so?

What is happening right now is, beginning in 1980 the Soviets came into a growth area of the cycle which will continue through '83, and then they will taper off a bit.

STAT

GROWTH RATES OF SOVIET MACHINERY OUTPUT AND
MILITARY HARDWARE PROCUREMENT

	<u>1966-70</u>	<u>1971-75</u>	<u>1976-80</u>	<u>1981</u>
Civilian Machinery	8.2	9.0	5.8	1.8
Military Machinery	3.6	4.5	3.4	5-7

We portray the growth in defense at 4 to 5 percent a year, but that is a long-term average. Within that, of course, there are cycles which are driven by the procurement programs.

But the important point to make there, Senator, is that the Soviets have under construction an expansion program at their defense production facilities. They have that onstream right now. It is all in place. STAT

Senator Proxmire. You argue that there is that tradeoff though, that as the civilian goes up, military goes down by and large, and vice versa? That wouldn't have happened in the '71-'75 period you referred to earlier, but it seems to be happening more in the others.

In specific industries, yes. For example, at Nizhny Tagil, which is a big tank facility, the Soviets also produce some civilian transportation equipment, rail cars. The economy badly is in need of additional rail capacity, including rolling stock and diesel engines to move freight around the country. Here you have a huge plant at Nizhny Tagil that is producing tanks. STAT

Now that is a direct tradeoff that was indicated in an earlier chart. So, when you ask a question about civilian versus military tradeoffs, yes, there is a direct correlation.

Senator Proxmire. Let me ask a little more speculative question. I would think the Russians would be anxious to enter an arms reduction agreement, in view of their defense burden and prospects it will grow heavier.

They entered into a SALT II agreement, which the U.S. refuses to ratify.

What is their attitude about attempting a new agreement in the wake of SALT II? Can you give us any notion of how you judge that?

[] I would say that while there would be the same incentives for them to enter into such agreement, -- primarily military -- there may be a little bit more economic incentive at this point in time. But, given the nature of relationships right now, I don't believe they are very optimistic about a continuation --

STAT

Senator Proxmire. Are you saying they have an incentive but we do not? They are not optimistic because they feel we won't be interested.

[] I'm saying they have an incentive, economic but primarily a military incentive. Their incentive towards SALT historically has been one of attempting to both restrain U.S. technological developments where they believe that we have a real lead -- but also to some extent economic although not primarily. I believe that incentive remains. I am saying that I believe that their prognosis of the probability of a SALT accord in the near future is probably nowhere as high as it was two or three years ago, before SALT II ran into problems in the Senate.

STAT

Mr. Rowen. Mr. Chairman, let me just add a point. If you go back to the circumstances that surrounded SALT I and compare it with the situation today, it is really very different.

In the spirit preceding the 1972 SALT agreement, the United States had cut back its strategic forces very substantially during the course of 1960s, scaled back very greatly.

The Soviet Union had expanded its programs during the '60s.

And of course as we know now with hindsight, it continued to do so contrary to the expectations of certainly some Americans involved in the process of negotiating that agreement.

The situation now is really quite different. The Soviet Union has already built itself up very substantially. The United States is now turning around and beginning a program much advertised, for increasing our own strategic forces. Whatever the incentives the Soviet Union had in early 1970s for SALT or that type of agreement, they would seem to be even higher today for the reasons I suggested.

Senator Proxmire. So our buildup is doing the job that some advocates of the buildup said it would do. In your judgment it is making them more willing to negotiate?

Mr. Rowen. We don't know that yet. As Mr. Steiner said, there are several other factors --

Senator Proxmire. They may be pessimistic about it, but are we creating a situation where they recognize that we are not going to permit them to have an advantage. No matter how much they put into it, we are going to match it?

Mr. Rowen. That goes to the question which we are really not that expert--that is, what are the objectives of the Administration in terms of our own defense policy. We really can't speak to that.

Senator Proxmire. I am making my own assumptions that that is what we will do. If we do that, what is your conclusion?

Mr. Rowen. I think just to address the Soviet side of this, if they are persuaded that we are embarked on a really very ambitious program to negate many of the gains that they have made in the last two decades -- and those gains have been obviously very substantial -- then with regard to incentives, the incentive is powerful for them to engage in really major arms control discussions aimed at reducing us, and hopefully giving away as little as they can for themselves.

On the economic side they also have a strong incentive to reduce their own allocation to the defense sector for reasons that we have discussed this morning.

So incentivewise, it has to be very powerful. But whether or not that will result in a negotiating position which will be one that couldn't possibly result in further agreement, it is very hard to say.

Senator Proxmire. When they appeared before us, the Defense Intelligence Agency indicated the damage and production losses that could occur if the Soviets intervened militarily in Poland, and the costs that would be incurred partly explains the decision by Moscow so far not to intervene.

Will you comment on this view and give us your assessments of the chances of Soviet intervention in Poland?

Mr. Rowen. Let me be sure I understand the question.

Damage to production resources you say in Poland?

Senator Proxmire. That's right.

Mr. Rowen. That must be a factor.

Senator Proxmire. Damage to the Polish economy and so forth.

Mr. Rowen. The "and so forth" is important here. There is quite a lot of damage that might result.

That is sort of an openended question. It depends somewhat STAT upon the time of the year. For example, is it disruptive to agriculture operations which are now just coming to an end?

If the invasion had come in August, during the height of the grain harvest additional costs could be put in terms of how much more hard currency they would have to expend in the world's agricultural markets to sustain the Polish population. It may have been on the order of \$7- or \$8 billion if they

destroyed enough crops as a result of hostilities -- or, if the Poles had foregone harvesting their crops.

Now if they do it in November after the harvest of grain and other crops, that type of cost is avoided.

As far as damage to industrial plants, to the transportation system, to the infrastructure is concerned, it depends on how the Poles react.

I think we agree with DIA that in terms of direct costs to the Soviets to invade Poland with a minimum amount of resistance on the part of the Polish armed forces, it would be on the magnitude of about \$10 billion. This estimate assumes no unusual damage to the Polish economy, including agriculture. In a size context this would be equivalent to about 8 percent of Soviet annual outlays on defense.

Senator Proxmire. Did they give primary weight to this consideration that the most likely time for this invasion would be winter, November-December?

The "window of vulnerability" is before the snows reach any depth. Between mid-October and early December is probably logistically the most likely period.

STAT

Then again, of course, in the spring.

They would certainly like to avoid disruption to agricultural activity on either side of the border.

Senator Proxmire. Which they would do in the spring.

But it would be less disruptive say, than in August or September when harvesting is underway on both sides of the border.

STAT

(Security deletion)

Senator Proxmire. It is sometimes argued that the Soviet Union produces many more engineers and scientists than we do. Their education at all high school levels is superior to ours with respect to scientific, mathematical training.

In the New York Times just in the last two days, there were articles that compared the years of physics, chemistry, and mathematics that our students typically have and that the Soviet students have. It was very appalling. It was pretty shocking that only 9 percent of our students, I think, take courses in physics. And those that do, have one or two years of it.

The Soviet Union mandates, requires four years and so on.

What are the facts as you see them here, and what implications does this have to our military strength in the future?

The short answer to that is the market will dictate.

STAT

Senator Proxmire. The market seems to be ineffective here. You have people graduating with the B.S. degree, four years of college, getting top salaries, and a terrific incentive. A liberal arts B.A., can't begin to match it. The market offers \$25,000 to begin with for kids just out of college. And yet we don't seem to be able to supply enough engineers and scientists.

The market doesn't seem to be effective. This is not persuading people to concentrate in these areas.

Mr. Rowen. Mr. Chairman, that's really, I think, an incorrect perception. There's a lag in the market, I think. The students don't have perfect foresight in electing the fields to go into. They do not see ahead all that well. But if one looks now at what happens at my university I have come from recently, Stanford University, the influx, the demand in engineering, has shot up pretty remarkably. This is true throughout the country in science to some extent, but especially in fields of technology.

I would predict in five to eight years we are going to be talking about a glut of engineers.

I would add the point that we do know, a good deal about the quality of the education received. My impression is that you have to be careful in the labels attached to various degree levels in the Soviet Union, in that the level of training is not always as high as it appears from the labels.

Senator Proxmire. They might call an engineer or scientist, somebody we'd call a graduate of a vocational school.

That's an important point. As far as science education -- STAT there is no question that a much greater proportion of the relevant population have had higher mathematics, physics, and chemistry courses than in this country.

But Mr. Rowen makes a very apt point. It is true that they graduate annually three times as many engineers as we do. On the other hand they seem to have a great proclivity to misallocate engineers.

Soviet engineers are trained in narrow fields where courses have been preselected and relate to each speciality. Such narrowly specialized training acts as a weakness, however, making it harder for one system to adapt to technological change. Also many engineers and scientists are used in jobs which would not require engineering degrees in the U.S., such as factory foremen or technicians in design bureaus. Soviet engineers do not have a market mechanism to provide the incentive for additional training. In fact an increasing number of engineers and technicians are taking jobs as blue-collar workers in industry because of dissatisfaction with their positions and higher salaries as skilled workers.

Senator Proxmire. In past years, the CIA testimony included references to strikes, civil disturbances, and other signs of unrest -- food shortages, and long queues? Has the number of such incidents increased or diminished?

The number, as we measure, as we know about it, has not given us reason to believe the level of civil discontent, civil unrest has changed much in the last three or four years.

STAT

The Soviet approach to handling the increasingly stringent situation as far as quality of food supply is concerned, is to set up a very elaborate rationing system, not only for the elites in the military, the technocracy and the party, but also in industrial plants. There is a very elaborate distribution system inside plants, and inside offices. So that what we see, what others see on the streets is basically for long queues, very long queues for the residual amount of certain foods, such as meat and dairy products. In other words, the food situation is worse at the retail level, for those people without some special access. Also, the food situation for them is worse now than it was in the mid-'70s, and earlier.

Senator Proxmire. You mentioned declining worker morale. Is that a subjective judgment on your part? Or can you actually measure the morale of the Russian work force?

That's based on numerous anecdotal materials, which suggest that morale is worse now than in the early '70s.

STAT

Senator Proxmire. How does one really make that kind of a judgment, and make it in a way that you could rely on?

It seems to me that if I were asked how the morale in this country, of our work force, compares with the late '60s, I just don't know.

I went to a University of Wisconsin meeting the other day with some very top people, and they say the morale of the kids is terrific now, so much better than it was in the '60s; vastly improved. They were very, very optimistic about it.

But it was a subjective judgment. I hope and pray they are right. They said the students' attitude is so much more constructive than it was. There is none of the lack of patriotism and so forth that was so unfortunate during the Vietnam period. In fact, it has gone the other way, in a very encouraging way.

But again, that was a subjective judgment. But I wonder if you can really rely on anecdotal evidence.

(Security deletion) For one thing, Western scholars who have visited the Soviet Union have put pen to paper in the last 20 years, saying "I was in the Soviet Union in the early '60s, late '60s, early '70s, late '70s, have had perhaps 10 years' experience over the last 20 years, and here is my perception, given the contacts I have with the Soviet system and my Soviet contacts. Here is my personal view of how things have changed." They are describing some of the manifestations of what Professor Bialer of Columbia University calls "the politics of stringency." We have been persuaded by this and other evidence (security deletion) that indeed there has been a meaningful change in attitudes, especially of the younger population.

STAT

Senator Proxmire. Let me ask you this: Do you have more confidence in the estimates of morale in the Soviet Union than you have on the estimates of morale in this country?

Naturally no.

STAT

Senator Proxmire. How much confidence do you have when people say morale is better in this country than it was 10 years ago? Do you buy that or not?

I buy that. I buy that, because I go into classrooms, and I talk to professors at a wide range of universities and privately--

STAT

Senator Proxmire. I am not talking about the students. I am talking about the whole economy, the economy as a whole.

I have to depend on what I read in the popular press.

STAT

Can I add something to this? (Security deletion) Twenty years ago, Khrushchev launched the 20-year program that by 1980 the standard of living in the Soviet Union would be brought up to that in the United States. And I think through the '60s, people felt that there was a fighting chance to get there. Maybe it was an ambitious goal, but things were improving.

STAT

The constant theme I hear now is a shift towards much less optimism somewhere in the '70s.

Senator Proxmire. See, in this country, it's so hard -- I think if you talk to business people, morale is a lot better. There's no question about it. Most of them are sold on the Reagan program. They think we are really moving in the right direction, and they are enthusiastic. Some of them are euphoric -- a much different situation than we had a few years ago.

You talk to a lot of working people, and others, it's not the same picture. It's different. It depends on what their experience is, particularly the fact that unemployment has increased, for instance.

Talk to people in the home-building industry, particularly the workers, construction workers, where unemployment is 16 percent now. They have either lost their job, know somebody that has, or are afraid they will lose their job. Morale is terrible.

So I think in this country, it's varied, and I would think it's hard to generalize on a country as diverse and massive as the Soviet Union.

Let me ask you this: There is great controversy over the causes of the productivity slump in this country -- and we have had a productivity slump. If there is any consensus -- it is that an increase in investment and an improved capital-labor ratio would improve productivity.

But in the Soviet Union, there has been a tremendous emphasis on investment. They can do it because they have a totalitarian state. They have depressed consumption, and yet productivity growth is declining. How confident are you about the nature of the Soviet productivity problem?

There are two facets to that. We are reasonably confident that we are measuring it properly. We are less confident on what the basic causes are. Capital stock, the stock of plant and equipment, has risen even though investment growth has been slowing. The Soviet stock of plant-equipment has been rising at a very rapid rate, between 5 and 7 percent annually over the last 20 years. And in the face of that, we see not only declining growth in total productivity, but growth in labor productivity has fallen from a 4-1/2 percent average annual increase in the first half of the '70s down to 1-1/2 percent, and maybe even lower, this year.

STAT

Senator Proxmire. Does that coincide with their figures, too? The Soviet Union's figures confirm that? Do they claim something else?

They claim a higher growth in labor productivity but the configuration of trends are the same.

STAT

Senator Proxmire. They admit their productivity growth is slowing down?

Yes.

STAT

They have the same configuration of trends in the official statistics.

Senator Proxmire. Somehow, it's not working. And that is a fascinating fact, that you have an increase in investment in plant and equipment, as you say, and a decline in productivity growth, by their own statistics. It is not a matter of our estimates; it is a matter of their own figures' showing that they have got decline.

[] That's right.

STAT

Senator Proxmire. Maybe this means the notion that investment is the key is not as clear as we thought it was.

Maybe you need something else, as far as the management and work ethic and morale, and so forth.

[] Well, some observers of the Soviet scene argue that this declining growth in productivity is a key indicator of the deep-seated cynicism on the part of a society, as [] indicated, that no longer believes the good life is coming, as Khrushchev promised them in the 1960s.

STAT

STAT

We believe there is a feeling, widespread in Soviet society, covering all social groups, that lack of progress in the standard of living in real terms has affected them. This is a broad phenomenon. They feel the standard of living is leveling off, and their chances of having, for example, car ownership or an individual apartment with relevant accoutrements, is nil, as opposed to 15 or 20 years ago, when their expectations were very high that they and their children would have, by this time, or in the '80s, much more than in the '60s or '70s.

Senator Proxmire. One hard, clear fact which you seem to have confirmed earlier was that the diversion of resources to the defense sector, and the emphasis on the military production has had an overall depressing effect on Soviet GNP.

Somewhat depressing effect but probably less than popularly perceived. STAT

Senator Proxmire. Very good.

I just have one other question for the record. Will you supply for the record, Mr. Rowen, annual real defense spending rate increases or decreases since 1955, and explain how you adjust the figures for inflation?

Mr. Rowen. Yes, we can.

(The following information was subsequently supplied for the record:)

Soviet Defense Expenditures

In the USSR, information on defense spending is a closely guarded state secret. Only one statistic--a single-line entry for defense in the published state budget--is reported each year. This figure is uninformative because its scope is not defined and its size appears to be manipulated to suit Soviet political purposes. (Changes in the announced defense figure do not reflect the changes we have observed in the level of military activities.)

To provide information which the official defense entry does not, CIA periodically estimates the cost of Soviet defense activities. Our estimates begin with a detailed identification and listing of the activities and physical components which make up the Soviet defense program for a given year. By a variety of methods that data base is converted into a value estimate in 1970 rubles at factor cost.

The expenditure estimates in the accompanying graph and table were derived using this direct-costing or building-block approach. They are based on a broad definition of Soviet defense expenditures which includes activities

that the Soviets may define as defense related but which are not included within the US definition of defense. These include expenditures for internal security forces, construction and railroad troops, and the type of space programs that are carried out by the military in the USSR but by NASA in the United States. Overall, we believe the quality of our estimates is significantly higher from the late 1950s on than for the early and mid-1950s. We have less confidence in the description we have of Soviet military activities during the earlier 1950s and in the constant 1970 ruble values we apply to them than we have in the physical data and ruble values for later years.

The graph and the figures in the table represent the upper and lower bounds of a 90-percent confidence interval around our estimate of Soviet defense expenditures from 1951 through 1980. The interval was derived by quantifying and combining subjective estimates of confidence in the estimates of the elements of the major components--RDT&E, procurement, construction of military facilities, personnel, and O&M--that make up the total. The size of the interval changes over time as the weight of the component estimates and our confidence in them varies. For example, the interval is wide through most of the 1950s because our confidence in nearly all of the component estimates is lower for that period than for subsequent years. The narrower interval in the 1960s and early 1970s reflects our greater confidence in the estimates for those years. The interval widens again in the 1970s as the estimate of spending for military RDT&E, in which we place relatively low confidence, increases as a share of the total, and the estimate of military personnel costs, to which we attach high confidence, decreases as a share.

(Table 4)

(Figure 7)

Senator Proxmire. Thank you, gentlemen. Very much appreciate your testimony. I think it has been most enlightening. And we are looking forward to releasing it as soon as possible, because I know other members who couldn't be here today, and in the Congress generally, and in the public, will be enlightened by your fine testimony.

Thank you very much.

Mr. Rowen. Thank you, Senator.

(Whereupon, at 11:35 a.m., the hearing was adjourned.)

Table 4

ESTIMATED SOVIET DEFENSE EXPENDITURES, 1951-80
(Billion 1970 Rubles)

<u>Year</u>	<u>Upper</u>	<u>Lower</u>
1951	33	19
1952	33	20
1953	30	19
1954	31	20
1955	36	24
1956	34	23
1957	30	21
1958	30	22
1959	29	22
1960	31	23
1961	34	26
1962	38	29
1963	39	31
1964	42	34
1965	43	35
1966	44	36
1967	47	39
1968	50	42
1969	52	43
1970	53	44
1971	54	45
1972	56	46
1973	58	48
1974	62	51
1975	65	53
1976	69	56
1977	70	56
1978	72	57
1979	75	59
1980	79	62

Estimated Soviet Defense Expenditures, 1951-80

